THE IRON AGE

New York, October 11, 1928

ESTABLISHED 1855 VOL. 122, No. 15

Profits From Apprentice Training

General Electric Official Reckons Cost of Educating the Individual Is $3,000 but Expense Is Recovered When He Takes Supervisory Job

AN INTERVIEW WITH JOHN W. UPP

ON a 28-acre plot in West Philadelphia, the General Electric Co. is concentrating all design and manufacture of "switchgear." Switchgear not only includes station switchboards, but air and oil circuit breakers (from the small ones used to guard a single machine to huge outdoor installations to handle thousands of horsepower) and switches and switching stations for every kind of service and capacity. About 4000 men are now employed, a figure which will be considerably augmented when the auxiliary operations now conducted at other points are transferred to the new organization.

A visitor at this plant is struck by the many well-conceived plans for the comfort and health of the employees, and the orderly production of a wide variety of equipment with a minimum of waste motion and delay, much of which is "special" in that only a few will be made. Personnel matters have been given prime consideration. In no department is this feature better exemplified than in the apprentice school.

JOHN W. UPP has managed the switchboard department of General Electric Co. for more than 25 years. He was born in Sandusky, Ohio, in 1868 and graduated from Cornell University in 1889 as a mechanical engineer. He is now in charge of all matters pertaining to "switchgear" and manager of the rapidly expanding Philadelphia plant of the General Electric Co.

Here in a wing of one of the main manufacturing units are assembled 50 of the most modern machine tools, hardly two of them alike, yet each a representative of those installed in the main shops and each properly selected to perform one or more items of regular production. An adequate and shipshape tool room is also installed. Alongside are four well-lighted and comfortable class and drafting rooms, and a couple of offices for the supervisors, teachers and clerical help.

Here machinist apprentices turn out parts requisitioned by the stock room, destined for switchgear under construction. Obviously such extensive and high-grade equipment means one thing—that the management is sincerely interested in apprentice training. And it was therefore found that the manager of the Switchgear Department, John W. Upp, was willing to talk rather freely about the expected returns from this educational effort.

Question: How long has the department been in operation?

Mr. Upp: "As you can see,

all our buildings and equipment are relatively new. The apprenticeship system at the Philadelphia works started in August, 1926, with three apprentices. It was recruited steadily until now we have 60 in the machinist course and 20 in the drafting course."

Q. Have you set a limit on the number?

Mr. Upp: "Yes; experience with similar schools in five other plants, dating back nearly 30 years, indicates that we cannot place more than 12 to 15 apprentices among each 100 journeymen without unduly interfering with the regular production."

First Lessons on a Turret Lathe

Q. How do you recruit the students?

"It has been necessary to do more or less advertising among our employees, by word of mouth and through the plant paper. O. H. Ginn, the head of the department, has also visited high schools in and near Philadelphia, explaining the opportunities we offer. Experience in other places shows that before long the apprentice system advertises itself, and an adequate number of desirable candidates continually present themselves.

"Qualifications? A prospective student must first of all convince us that he is serious-minded, and not merely looking for a job. He must pass a physical examination and be acceptable to the employment department. He must have a complete grammar school education. High school graduates are given one year's credit—that is, they complete the course in three years instead of four. The youngster is accepted on probation, as it were, for a couple of months. If he then appears to have the right stuff in him a regular form of indenture (we call it an "apprentice agreement") is signed by the student, his parent or guardian, and by me representing the General Electric Co."

Q. Is the work scheduled in definite school terms?

Mr. Upp: "Not in the sense that school opens on a certain date and closes for vacation on another. An acceptable student may enter any time there is a vacancy. His work will be adjusted to his individual capacity, and his standing in the various classes determined by the instructors in short order. Since instruction is done to relatively small squads, the new student can readily be attached to a group which is at approximately his educational level. As you can see by the schedule of studies, the class room work is fairly extensive."

How about the shop training?

"All apprentices are looked upon as regular employees of the General Electric Co., and conform to the regular working hours. Nor are they permitted to absent themselves without previously being excused. Usually a tendency toward chronic tardiness is corrected by assigning the delinquent to a few days' 'fatigue duty,' that is, cleaning and janitor work around the apprentice department. With the exception of the class room work, which takes up an hour and a quarter daily, he is working in the shop. The machinist apprentice spends from one to two years at machines in the training department. At first he is helper to an advanced student, but soon he gets on regular production, of course under the watchful eye of a supervisor. After he has mastered the various tools he works a year in the manufacturing departments, and the last year in the tool, die or machine department in which he wishes to specialize. Such work increases his speed, rounds out his experience, and introduces him to the real shop atmosphere."

It seems to me that it would be rather hard on fine machine tools to have them operated by amateurs.

"On the contrary, cost records show that maintenance in the apprentice department is slightly lower than for the same machines in the production line. This is probably due to the close supervision given to the students, and also to the much more deliberate pace of the operations. You should also remember that no 'practice' or 'exercise' work is done—all of it is destined for use. For instance, here is a short shaft with three keyways. Width of the keyways have a tolerance of plus or minus 0.0005 in. Angle must be correct to within 1/10 deg. A first year man made 106 of them with only 5 rejects. His speed was a little less than 45 min. each."

It seems peculiar that you are not able to get an ample supply of draftsmen, ready trained, from the young engineers graduating in electrical engineering.

"There is not such a surplus of these as you might imagine. When we get them we find they know a few things about many branches of electricity. What we want for a draftsman, and we find we have to teach him ourselves, is an intelligent man who knows a large number of

things about switchgear—just one important phase of electrical engineering. A high school graduate studying the drafting course first spends six months in the tracing department, learning drawing office routine. Then he spends six months in the apprentice department, becoming acquainted with the machine tools. Then he goes to the welding shop. For a year he progresses through the various assembly departments to become familiar with the different small parts of apparatus. The final period is in the drawing room. By this means we are able to show the student draftsmen the capabilities and the limitations of the various fabricating processes, so they will later avoid designing a part or an assembly which will be unnecessarily difficult or costly to make and erect."

All this is lovely for the student, but a casual visitor would guess that you are spending a lot of money on each man, with no assurance he will return it to you.

"An actual balance sheet would be difficult to strike, because there are many intangibles which cannot be evaluated. Instinctively I would say that there *must* be money in it. Experience in other G. E. plants proves that apprentice training is the first step in a continuing progress toward sub-foremen, foremen and departmental managers. In this way the course helps solve one of the very biggest managerial problems—'Where can I get upstanding foremen?'

"But let's make some Yankee guesses on the matter. Take a grade school boy. He enters at 22½c. an hour, and steps up 2½c. every six months, graduating four years later at 40c. For a good record he gets a 2c. an hour bonus, and a $100 prize on graduation. Now assume that the value on the boy's production ranges from 10 per cent of his wages up to 75 per cent at graduation (which certainly is conservative) and the balance sheet stands as follows:

	Wages	Value of Production
First year	$556	$55
Second year	673	168
Third year	790	395
Fourth year	907	672
Total	$2,926	$1,290

That makes a net cost of $1,636, or with 100 per cent overhead $3,272. Experience shows us that 65 per cent of our graduates become permanent employees, so counting for defections it means that each graduate may cost us as much as $4,000. So much for the debit side.

"What about the credits? Mostly intangibles. But we

Typical Scenes in Class Room and, at Top of Page, in the Machine Shop

may evaluate the *permanency* of the employee (even if he never rises above a mechanic's grade) by assuming that one permanent employee is equivalent to six turnovers. It must cost at least $200 to find, hire and get a new man into decent production. That cuts the debit down to $2,800 immediately. That figure would be wiped out immediately when the man enters the supervisory grades. To my mind, a plant manager would regard himself lucky if he could acquire an adequate number of foremen, each of whose loyalty and capabilities were well known, for $3,000 apiece!"

Classroom Schedule

For Four-Year Machinist

1st and 2nd Term—Arithmetic, algebra, mechanical drawing, English and practical talks.
3rd Term—Mensuration, geometry, mechanical drawing, English and practical talks.
4th Term—Plane trigonometry, mechanical drawing and industrial history.
5th Term—Elements of mechanics, free-hand and mechanical drawing, industrial history.
6th Term—Principles of mechanisms and mechanical drawing.
7th Term—Strength of materials, tool design and metallurgy.
8th Term—Types of prime movers, tool design and metallurgy.
9th Term—General physics, tool design and shop economics.

For Three-Year Drafting

1st Term—Advanced algebra, mechanical drawing and metallurgy.
2nd Term—Plane trigonometry, slide rule, and mechanical drawing.
3rd Term—Elementary electricity, descriptive geometry, and shop economics.
4th Term—Elementary analysis, tool design and business English.
5th Term—Advanced direct current electricity and mechanics.
6th Term—Strength of materials and advanced alternating current electricity.
7th Term—Thermodynamics and mechanisms.
8th Term—Machine and electrical design.

Profits Accrue from Volume at Expense of Margin Per Sale, Says Conference Board

VOLUME, rather than the margin per individual sale, is the road to profits in competitive industry and trade. In fact, narrow profit margins per sales dollar have come to stay, because they are an inevitable characteristic of the trend toward large-scale enterprise and mass production.

This is the conclusion of the National Industrial Conference Board, New York, after analyzing the ratio of profits to sales and investment for more than 4000 large and successful industrial and mercantile corporations. The investigation, which was part of a study undertaken to determine the possibility of shifting the corporation income tax to the consumer, covered the post-war years 1918 to 1925.

Sales at prices closely approximating cost of production, the Conference Board analysis discloses, are the dominant factor in determining commodity prices, forcing producers and merchants to seek profit by volume rather than profit by individual sale. Approximately half the sales of the large and successful corporations selected for analysis annually yielded less than 5 per cent profit in most of the manufacturing industries; in trade, particularly the wholesale trade, more than half of the sales were made at a profit of less than 5 per cent or at a loss. The average amount of sales at low profit rates or at a loss for all corporations is estimated to be even greater.

This condition, however, does not necessarily result in a low return on capital invested, but rather tends to accelerate turnover of capital and thus may result in high returns, the Conference Board points out. Corporations operating at the lowest ratio of profits on sales were found to have ordinarily the highest turnover of capital and often, therefore, are among those enjoying the highest return on capital.

The exact proportionate amount of the total business of all corporations transacted at a loss cannot be determined with the data now available. Almost every corporation, however, makes a portion of its sales at a loss, even though a net profit is realized on the grand total.

Although the corporations whose transactions were studied by the Conference Board include almost all of the large successful corporations in the country, every year during the period considered the total operations of some of them resulted in a loss; on an average corporations operating at a loss handled about 5 per cent of the total sales of all of the companies under scrutiny. When all manufacturing corporations in the country are considered as one group, it is found that those operating at a loss transacted about 13 per cent of the business; trading corporations operating at a loss transacted about 18 per cent of the total business of that class of companies.

High-Temperature Resistance Alloys

RESEARCH data on high-temperature resistance alloys were presented at the fall meeting of the (British) Institute of Metals in Liverpool, England, Sept. 5 and 6, in a paper, "Laboratory Experiments on High-Temperature Resistance Alloys," by C. J. Smithells, S. V. Williams and J. W. Avery, offered as a communication from the staff of the research laboratories of the General Electric Co., Ltd., Wembley, England. Briefly the authors presented the following results:

A series of nickel-chromium alloys containing from 10 to 60 per cent of chromium, and a few ternary alloys containing tungsten and molybdenum, have been made from specially pure materials melted in hydrogen. They have been subjected, together with some commercial nickel-chromium alloys, to new forms of test for resistance to oxidation and to sag, at high temperatures. For the binary alloys resistance to oxidation increases with increase in chromium content up to 30 per cent. With more than 40 per cent a second phase appears, and resistance to oxidation falls. Ternary alloys containing only 10 per cent of chromium show low resistance, while those containing 20 per cent of chromium show high resistance to oxidation. The composition of the oxides formed on the alloys has been determined by X-ray analysis. For high resistance to oxidation the oxide layer must contain at least 50 per cent of chromic oxide. The composition of the oxide layer is determined by, but is not generally the same as, the composition of the alloy.

For the binary alloys resistance to sag at high temperatures decreases with increase in chromium content. The ternary alloys sag more than the binary alloys having a similar nickel content. Small amounts of impurities have a marked effect in lowering both the resistance to oxidation and to sag. The electrical resistivity of all the alloys has been determined between 20 and 1000 deg. C.

Atomic Hydrogen Welding In Production

Gas-Tight Seams for Refrigerators and Indicating Instruments—Strong Joints on Automobile Parts—Repairs to Dies

BY P. C. GREENE*

ATOMIC hydrogen welding utilizes the electric arc with a stream of hydrogen gas. Power is single-phase, 60-cycle alternating current and an arc is maintained between tungsten electrodes. The hydrogen serves a three-fold purpose: first, it prevents electrode oxidation; second, it forms a highly reducing atmosphere over the work, preventing the formation of oxides and nitrides in the weld metal; third, it changes to the atomic state in passing through the arc, and recombines to the molecular state at the surface of the weld metal, thus acting as a powerful heat carrier and generator.

It must be borne in mind that the arc does not touch the work and that the work is not part of the circuit. The weld in reality is made by a flame of atomic hydrogen at approximately 4000 deg. C. This ideal combination of high temperature with reducing atmosphere gives unusually strong ductile welds at a rapid rate, free from oxides and blow holes and with a smooth finished appearance.

The development of this new welding process has been so recent that its field is not yet mapped out. In the factory it is proving a formidable process, not alone on a quality basis, but on cost of operation as well.

Smooth Welds Require Little Finishing

Several interesting applications may be noted. First, perhaps, is the welding of the cover and icing unit of the General Electric refrigerator. The cover is formed of sheet steel and the projections on the under side are folded toward the center, thus requiring a welded joint extending from each corner diagonally toward the center. These welds are made by the atomic hydrogen process, not because of the strength and soundness of the joint produced, but primarily because of its extreme smoothness, requiring a minimum amount of grinding and finishing to produce a level surface. The saving in finishing more than offsets the lower initial cost of metallic electrode arc welding which was originally used.

The icing unit of the refrigerator is a second illustration. This unit is roughly rectangular in form and consists of three sheet-steel shells nested and edge welded at a common seam. The combined thickness of metal is about 7/32 in. and the perimeter about 32½ in. Finest quality welds are made on this work at the rate of 6½ to 7 in. per min., and little if any grinding or finishing is required before vitreous enameling. No imperfections in the enamel finish are caused by these welds.

Another valuable application is building up worn dies and molds; an hour of welding will often salvage a very expensive unit. Much extra machining and finishing is required, especially on small work, when a process is used that makes it difficult to control closely the amount of metal deposited. In the hands of a skilled operator the atomic hydrogen process gives a smooth surface, with equally good control as to location and amount of the deposit and seldom blisters or scales the adjacent polished surfaces.

As an example, two steel engraver's plates were welded; the original high polish remained unharmed at all points along a 5-in. seam up to within 1/16 in. of the weld where the metal had been in a molten condition. For this reason the Schenectady factory of the General Electric Co. is utilizing this process daily in salvaging dies and molds, and at least one other manufacturer is doing similar work. Stel-

Weld Just Completed in Minor Refrigerator Part Held in Fixture. Gas jet controlled by trigger on handle; electrical current by push button on bench

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liting of die surfaces has also been done very successfully.

Torque tubes for automobiles have also been made by the new process. This tube is ⅛ in. wall thickness, 2 in. outside diameter, made of S. A. E. 1035 steel. Into each end is fitted a splined steel shaft with a shoulder flush outside. A flush butt weld is made between this

Medium Steel Tube, ⅛ In. Wall, Fails in Torsion Before Weld Shows Distress

shoulder and the tube in 40 sec. Under test such tubes fail under torsion without affecting the weld. Because of the speed, appearance and strength, atomic hydrogen welding was adopted in preference to carbon arc welding.

Pipe Systems Welded Under Pressure

A unique application exists in a factory making indicating and recording instruments where quality, neat appearance and strength are paramount. First, the hollow alloy steel spiral which actuates the indicating needle is welded to one end of a steel capillary tube and the other end to the bulb containing the actuating liquid or gas. The sensitive system is then filled under pressure, and the entrance plugged rapidly by the atomic hydrogen process. In this operation a tight weld must be made, as an infinitesimal leak would throw the instrument out of calibration in a period of time or render it useless. The weld must also be completed before the heat flow from the welding zone is conducted to the liquid in the system, which would cause enough internal pressure to force the liquid out through the molten or cooling weld-metal. Other welding processes failed either because of porosity or time consumed. Since pressures in gas-filled instruments may reach 1800 lb. per sq. in., and 3000 lb. per sq. in. in mercury-filled types, it is readily seen that a perfect weld is required.

In this same service, alloy bulbs of nichromes are welded to steel capillary tubes, and nichrome plugs are welded in the bulbs. The smoothness of this high-speed weld on steel bulbs is remarkable—no filing or finishing is required.

Sheet aluminum, searchlight drums and the vacuum-tight welds on mercury arc rectifiers, the fabrication of monel metal tanks and the sheet steel tanks for small oil switches are other applications.

Doctor Hatfield Discusses Corrosion and Acid-Resisting Steels

SPEAKING in Providence, R. I., at a joint meeting of the Providence Engineering Society and the Providence Chapter of the American Society for Steel Treating, on Wednesday evening, Oct. 3, Dr. W. H. Hatfield of Sheffield, England, presented the section of his forthcoming Campbell memorial lecture, dealing with corrosion and acid-resisting steels, giving a summary of the experimental work done in his own and other laboratories.

Doctor Hatfield believes that "ordinary iron is intrinsically rust resisting" and links the passivity of iron caused by immersion in nitric acid, and the film of oxide isolated by Ulick Evans, with resistance caused by the addition of chromium. When chromium is added in sufficient quantity it forms a passive film, protecting the metal.

Stainless steel is stainless because of this passive protective film. While the addition of nickel alone to steel effects no improvement of the metal's resistance to nitric acid, the addition of 14 per cent of chromium to iron makes the metal as resistant to nitric acid as pure nickel. When nickel and chromium are both added to iron, the passive film is of a different character from that produced by chromium alone, and in many cases does actually resist acids.

Although a great deal of data on corrosion-resisting steels are available, it is difficult to answer any specific question of industrial application with a definite yes or no, until the factors of composition, concentration of acids, conditions and temperature have all been considered.

Doctor Hatfield distinguishes three classes of corrosion and acid resisting chromium steels—stainless steels, stainless irons and chromium-nickel or austenitic steels. Of the first two, more attention has been paid in Europe to the stainless steel group, in the United States to the stainless irons. Applications of the stainless alloys have been made in Europe to automobile parts, chemical equipment, ornamental iron, and engineering uses such as dock sluice gates.

On tests of atmospheric corrosion the order of increasing resistance to corrosion is (1) mild steel, (2) chromium steel, (3) chromium-nickel steel; likewise the austenitic and chromium-nickel steel are resistant to steam at high temperatures.

For engineering purposes, where, in addition to non-scaling properties, high tensile strength is required at elevated temperatures, the addition of silicon and tungsten to the chromium-nickel steels has proved effective.

Influence of Manganese in Steel Welding Rods

EXCESS of manganese in welding rods used on high-speed work, where the operator has little opportunity to puddle his metal, is apt to cause blow-holes similar to those caused by carbon. For this reason, and particularly for production welding on thin steel sheets, a rod low in manganese should be used. Considerable information on this subject is given in Bulletin 129 of the Fuzon Welding Corporation, 103rd Street and Torrence Avenue, Chicago. Physical properties of the weld seem to be improved in toughness by increasing manganese up to about 1 per cent. Above that ratio and up to 9 per cent manganese it hardens and makes the steel brittle. For some applications where brittleness is of little consequence the hardness thus produced is desirable.

With rods above 9 per cent in manganese, together with carbon over 1 per cent, the metal is said to be made very soft by quenching from a comparatively high temperature in water. On the other hand, if cooled slowly it is hard, and it hardens easily with cold work. On this account it offers great resistance to wear. All welds made with it are apt to check-crack unless proper rods and technique are used. This metal is non-magnetic and the properties are found most pronounced at between 12 and 14 per cent manganese and 1.25 to 1.50 per cent carbon.

In metallic arc welding, manganese in the welding rod affects its operating characteristics. While carbon speeds up the rate of melting, manganese either does not speed it so much or possibly even slows it. This is believed due to the fact that manganese oxide is not a gas except at extremely high temperatures. Hence, its formation does not produce a violent commotion, as with carbon, in throwing over the molten drops from the electrode end.

Forge Shop of Unusual Flexibility

Arrangement Permits Ease of Materials Handling and Short Travel for Work—Products Are of Many Materials

BY FRED L. PRENTISS*

ARRANGED for convenience in material handling, economy in operation and what are regarded as the most modern practices in layout, a new commercial drop forging plant recently was placed in operation by the Steel Improvement & Forge Co., Cleveland. Formerly confining its product largely to automobile forgings, the company has expanded into other fields and its growth necessitated the erection of a plant of larger capacity, which was built on a new site. It is now manufacturing all kinds of industrial forgings, as well as automobile and airplane forgings, and its products include forgings of stainless steel, monel metal and copper and brass.

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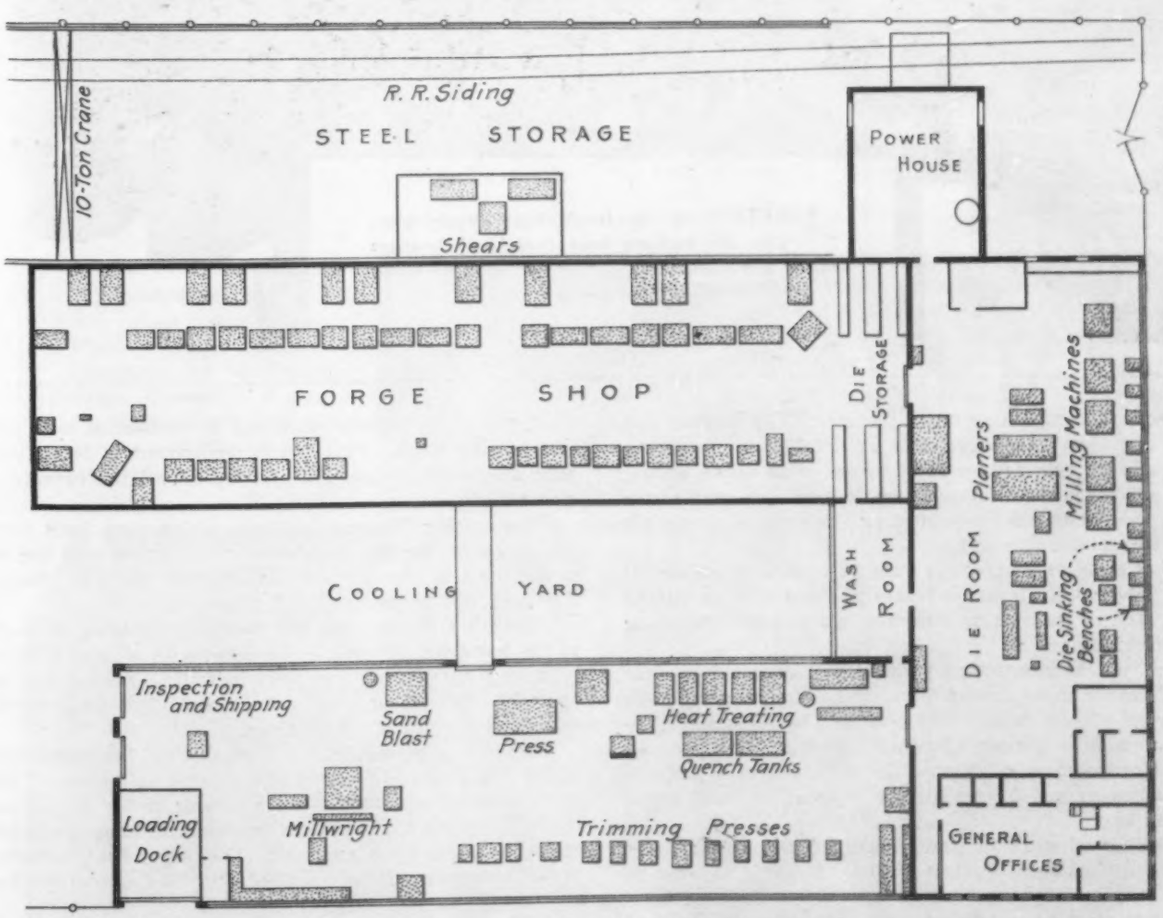
The forge shop and press room occupy parallel buildings, each 60 x 220 ft. Between these is a cooling yard, 40 x 200 ft. The heat-treating, inspection and shipping departments occupy space in the press room. The steel storage yard, 60 x 200 ft., and served by a 10-ton overhead traveling crane, is alongside the forge shop. A railroad siding extends along the outer side of the storage yard. Two electrically driven shears, with a capacity for cutting 4½-in. square 0.50 per cent carbon material, are located in a shear shed at the side of the stock yard, and adjoining the forge shop.

A die room, offices and laboratories are located in a 60 x 160-ft. building connected with the forge and press shops



LAYOUT of the Plant Conduces to Convenience in Handling Materials and Hence to Economy in Operation. The equipment includes 20 hammers and 21 presses

and running across their ends. This arrangement makes both shops accessible to the die department. Forging dies are stored under a balcony at the end of the forge shop and trimming dies in bins at the end of the press room.

Twenty Hammers in the Forge Shop

The forge shop is equipped with 15 board hammers ranging in size from a 6500-lb., four-roll hammer down to a 1200-lb. hammer, and five steam hammers ranging from 3000 to 1500 lb. The hammers are of the Erie, Chambersburg and Billings & Spencer makes. They are arranged in two straight lines down the shop and are grouped to obtain maximum production at a minimum cost. At the side of the 6500-lb. board hammer is a 3000-lb. steam hammer, and other units are so grouped that each steam hammer is alongside a larger board hammer.

Forgings are first blocked on a steam hammer and then finished on the adjoining board hammer. The forging furnaces that serve the larger units are back of the hammers, trolleys being provided for handling the work between hammers and furnaces. Furnaces are located also at the side of the smaller hammers, permitting one man to handle the work and minimizing steps.

Press room equipment includes 20 trimming presses of Bliss, Toledo and Cleveland makes and one 600-ton coining press, most of them being arranged in a straight line along one side of the room.

Both the hammers and presses are arranged so that there is ample space around the machines for handling work in process. Room is provided back of the presses for the installation of a conveyor system. Back of each hammer is a metal box 24 x 30 in. x 48 in. high, in which portable tool equipment and dowels for the hammer are kept under lock and key.

Handling of work in process and of dies and tools is done by lift-platform electric trucks. Stock is sheared to proper length, dropping into boxes, which are moved from machine to machine on trucks. These also carry the finished product from the shipping department to the car loading dock over a concrete driveway at the rear of the plant. A trolley in the shipping room loads the finished forgings on the trucks.

Leaving the hammers, most of the forgings are put into large metal boxes and go to the press room for trimming and heat treating. The large forgings, however, are usually hot-trimmed at the hammers. One of the presses is used for hot-forming and various special work, this unit being served by a separate furnace. A 1000-lb. steam hammer is located in the press room, to restrike forgings that require that operation after heat treating.

Automatic Control on Forging Furnaces

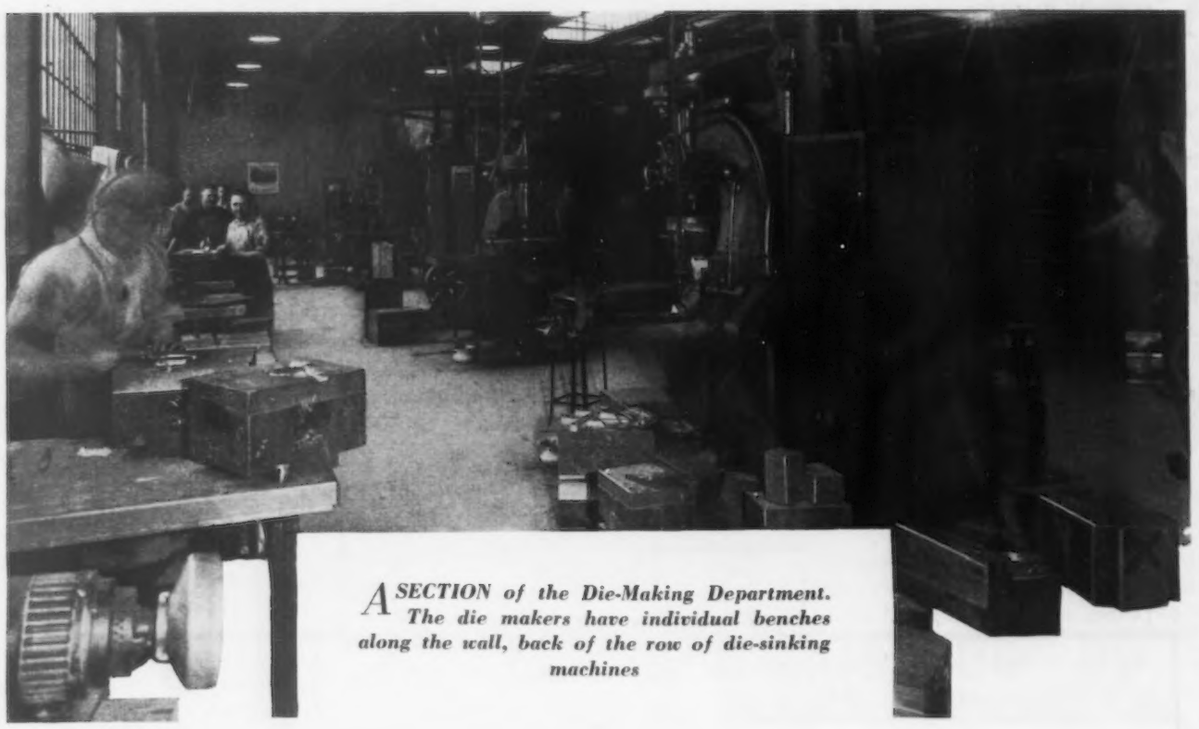
A feature of the forging furnaces is that some of them are connected with recording pyrometers and have individual automatic control equipment working through Geissinger valves. The control equipment has been placed near the office. Control of the heating furnaces is now being conducted in an experimental way in connection with special forging work. This control equipment is being used with a view of holding the heat control of the furnace to closer limits.

The heating furnaces, oil-fired, which were built from the company's design, are of steel construction, with the top arches made in sections held together with cast iron clamps. Any arch can be removed if it burns out.

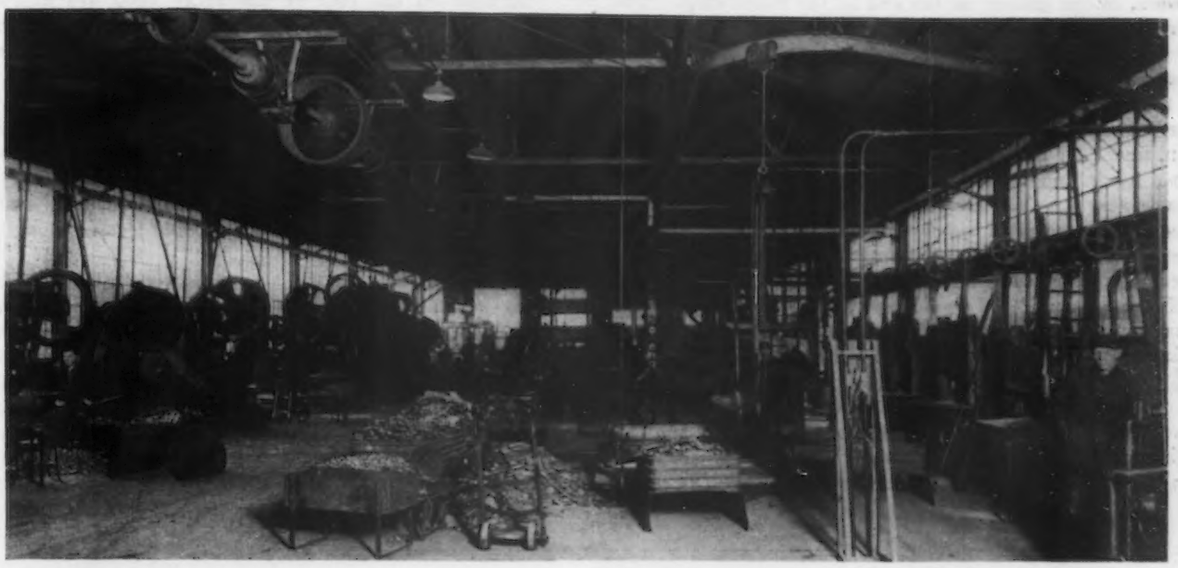
There are five natural gas fired heat-treating furnaces of the box type. They are connected with Wilson-Maeulen recording instruments and have indicating control for the operator. Quenching tanks are conveniently located at the floor level in front of the furnaces.

Steam is supplied from a Connelly 300-hp. water-tube boiler in a 37 x 48-ft. powerhouse located at the end of the stock yard. Coal dumped into a hopper at the end of the tracks is elevated into an overhead bin, the hopper and bin having capacity for one carload. The coal is fed by gravity to an automatic stoker supplied by the Combustion Engineering Co.

High-pressure steam is carried to the shop through an 8-in. high-pressure main that is stepped down to 3 in. at the last hammer. The steam pressure at the hammers is



A SECTION of the Die-Making Department. The die makers have individual benches along the wall, back of the row of die-sinking machines



MOST of the Presses in the Press Shop Are in a Row on One Side and the Heat Treating Furnaces on the Opposite Side. Liberal floor space is provided for trucking work

about 125 lb. Exhaust steam from the hammers is carried through a low-pressure line (3 lb. to 5 lb.) and is used to heat the plant and offices, through a vacuum heating system. The plant heating equipment includes three forced-draft heating units supplied by the Skinner Brothers Mfg. Co. The exhaust steam line starts with a diameter of 12 in., but is reduced in size beyond the supply line for the heaters. Each heater has a 5-hp. motor, which operates a blower that circulates the warm air through the rooms. The blowers will be used in the summer for creating a circulation of air through the shops.

Fuel oil for the heating furnaces is stored in four underground tanks with a combined capacity of 80,000 gal., and is pumped through a loop system of distributing lines by a Tate-Jones Co., Inc., system. The main oil line is 1½-in. pipe and the oil is fed to the burners through ½-in. pipe. One oil heater is located in the pump room and another one half-way through the system. The oil is kept at a temperature of 100 to 150 deg. Fahr. and a pressure of 30 to 35 lb. is maintained on the oil lines.

Much Air Is Used Under Pressure

Low-pressure air for the forge shop furnaces is supplied by two 5400-cu. ft. General Electric motor-driven pressure

HAMMERS in the Forge Shop Are Grouped, With a Steam Hammer Alongside of a Larger Board Hammer. A forging is first blocked on the former and then finished on the latter

blowers, in the gallery at the end of the forge shop. The main switchboard for power and light is in this gallery also. Air is delivered at 1½-lb. pressure through a 20-in. welded steel pipe. Low-pressure air for the press room, including the heat-treating furnaces, is supplied at the same pressure by a 3600-cu. ft. General Electric pressure blower through a 12-in. line. Air at 100 lb. pressure for sand blasting is furnished by an Ingersoll-Rand 62-hp. compressor. This compressor also supplies air for operating the valves on the shears and on some of the newer types of presses that have air-operated clutches, thus eliminating foot treadles. All forgings are cleaned in a Pangborn sand-blast room.

The forge shop is of good height, being 26 ft. to the roof truss and 41 ft. to the peak, providing clearance for the installation of larger hammers than are used at present. The roof and such portions of the sides as are not glass inclosed are covered with Toncan metal. The lower section of the forge shop side walls and portions of the press room side walls have 10 x 20-ft. rolling steel doors, which are kept open in summer to aid in ventilation and trucking.

Mounted on the roof of the forge shop are nineteen 54-in. Swartwout ventilators with a capacity for changing the air every 3½ min. The forge and press shops have concrete floors. All machinery foundations are oversize, so that press machines can be replaced by larger and heavier units. There are light and power and compressed-air lines back of all hammers, permitting the use of portable tools and lights.

The die department is well lighted and each die sinker has an individual bench, the benches being located along the outer wall.

A well equipped chemical and physical metallurgical laboratory is maintained. All steel when received is given a pile number; samples are taken from each heat and analysis is made of the stock and recorded. This follows the work through the process, and affords an identification of the steel from the time it is received until the finished forging is shipped. The record is kept on file so that, long after a forging has gone into service, a check may be made of the analysis of the steel from which it was manufactured.

Corrosion in Metallic Protective Coatings

A STUDY has been made of the corrosion occurring at different kinds of discontinuities in coatings of non-ferrous metals on steel; the work has included sprayed coatings of copper, nickel and aluminum, and, in addition, coatings of zinc and zinc-iron alloy produced by hot-galvanizing, electrodeposition, spraying and sherardizing. Specimens of varying thicknesses of coating were subjected to six different types of corrosion. A report of this study was presented at the fall meeting of the (British) Institute of Metals at Liverpool, England, Sept. 5 and 6, in a paper by Ulick R. Evans of Cambridge, England.

The cracks produced by bending are more dangerous than uniformly distributed pores, says the author. If the coating metal is cathodic to steel, the steel is corroded. Copper under some conditions causes marked acceleration of the corrosion of steel at exposed places, while nickel is less dangerous in this regard. If the coating metal is anodic to steel, the coating is likely to suffer corrosion, the steel thereby receiving protection; thus steel coated with zinc usually suffers no corrosion even at cracks until the zinc becomes exhausted.

Steel thickly covered with zinc usually fares better than thinly covered steel, notwithstanding the greater tendency to cracking. Old galvanized sheets carried more zinc than the modern material and generally lasted longer. Coatings of aluminum or zinc-iron alloys are themselves less attacked than coatings of free zinc, but for that very reason they afford less sacrificial protection to the underlying steel in certain waters.

Zinc itself is rather rapidly attacked when partially immersed in a chloride solution, but alternate salt-spraying and drying was found to build up a protective film—a fact which explains certain observations made on the behavior of galvanized iron in service.

Chromium Platers Subject to Nosebleed and Ulcerated Sores

COMPARATIVELY mild exposure to fumes arising from chromium plating baths is sufficient to cause nosebleed, ulcerated nasal passages and sores on the hands, according to governmental investigators.* Adequate ventilation and use of rubber gloves is recommended to prevent this industrial hazard.

The bath consists principally of chromic acid, and during the plating process considerable hydrogen and oxygen are liberated, and these carry a spray of chromic acid into the air. It has long been known that in the manufacture of chromic acid and chromates the operators are subject to perforation of the nasal septum and to formation of ulcers or "chrome holes" on exposed parts of the body.

To determine the extent of the hazard and the best means of overcoming it, several commercial plants were visited. It was found by Messrs. Bloomfield and Blum that exposure to very low concentrations of chromic acid—for example, one-sixtieth grain in 350 cu. ft. (which is about the volume of air breathed by a worker in eight hours)—is sufficient to cause nosebleed and nasal inflammation in a week. Higher concentrations or longer exposures cause extensive attack and even complete perforation of the nasal septum. This is painless, however, and the operator may be entirely unaware of the perforation.

Many of the employees were found to have chromium ulcers on the hands or other exposed parts of the body. No evidence was found of injury to the respiratory tract except in the nose nor of any effect upon the digestive system or the kidneys.

Eliminating the Hazard

While there is a real hazard in chromium plating, it is not critical and can be entirely eliminated by suitable measures. These should include an effective system of ventilation in which the air is drawn horizontally across the plating tanks into a narrow duct in which the air velocity should be about 2000 ft. per min. So far as possible rubber gloves, aprons and shoes should be worn. Frequent applications of vaseline or mentholatum salve to the nose and hands greatly reduce the danger of ulceration. All cuts and abrasions of the skin should receive regular inspection and medical treatment.

*J. J. Bloomfield of the Public Health Service, and W. Blum of the Bureau of Standards, writing in the Sept. 7 issue of *Public Health Reports*, Government Printing Office, Washington.

Local Conveyors Yield Economies

Automatic Pace Setters in Cadillac Plant Reduce Stock in Departments and Allow Space for More Machines

BY FRED L. PRENTISS*

CONVEYOR lines for sub-assemblies and departmental conveyors for handling work in process from machine to machine have recently been installed in the plant of the Cadillac Motor Car Co., Detroit. For the assembly of rear and front axles power-driven conveyors have been provided, and work is moved through several of the manufacturing departments on overhead conveyors, for successive operations.

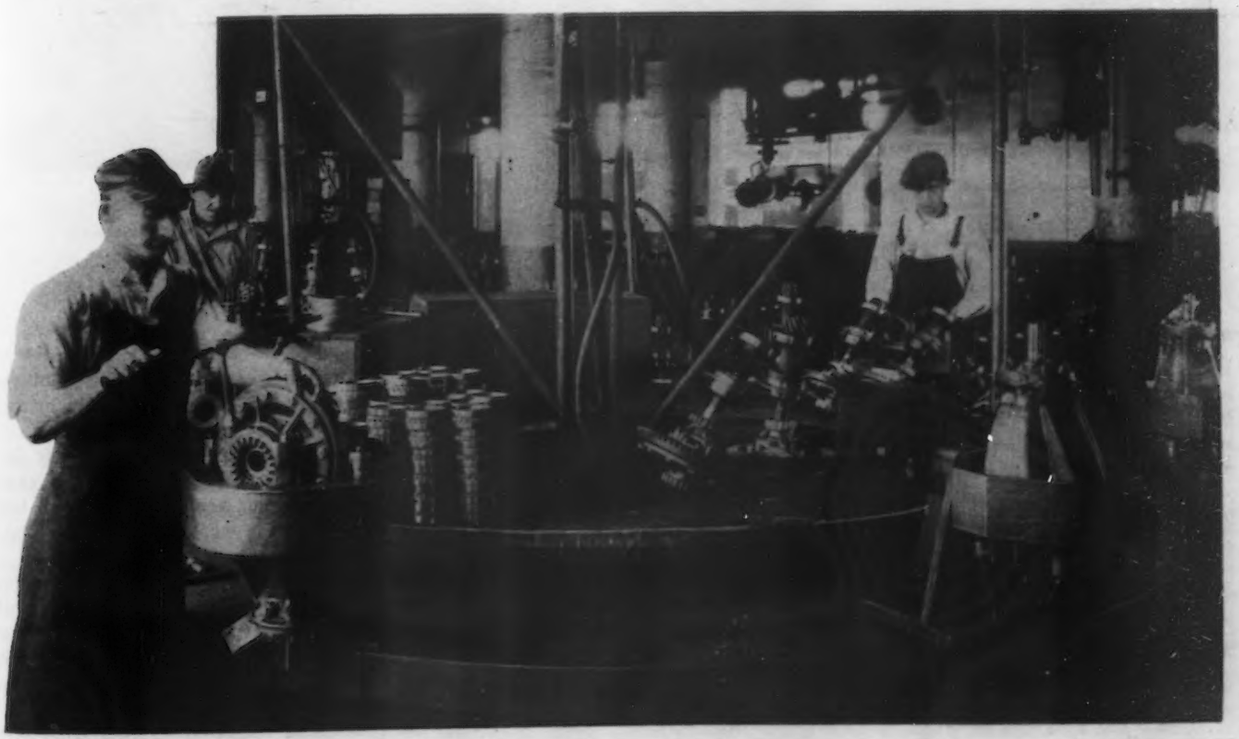
The extension of conveying equipment is effecting numerous economies in production. The assembly conveyors for axles act as automatic pace setters. They split up operations and permit carrying out progressive assembly to a fuller extent than was possible under old methods. The assembly conveyors have caused to be cast into the discard, in the departments in which they have been used, both the old type of floor stand and the dolly trucks mounted on casters, which took a great deal of floor space and failed to afford a solid mounting for the work during such operations as hammering. One advantage found in the use of the assembly conveyors is that the work during the assembling operations always has a solid support.

Much floor space is being saved by the departmental conveyors, thus providing room for additional lines of machines. This saving is effected by the elimination of trucks and the avoidance of the piling of material-in-process at the side of the machines. The department conveyors are also pace setters. With their use material is kept moving. As there is no piling up of stock in process, the amount going through a department at any time is but a small percentage of the quantity formerly piled on the floor. Another economy that is by no means small is effected by having a much smaller amount of stock to keep track of.

*Resident editor at Cleveland for THE IRON AGE.

Rotating Assembly Table or "Merry-Go-Round"

The rear-axle main-drive gear set is built up on a revolving circular conveyor known as a merry-go-round, 12 ft. in diameter, which moves at a speed of 2½ ft. a minute. This has a moving outer section or assembly table. A circular platform within the circumference of the moving table, and at a slightly higher plane, serves as a stationary table and is provided with racks for holding small parts used in the assembling. The operations on the merry-go-round include assembling the main driving gear and the differential gears in a carrier or housing, all making a gear set. Seven working stations are provided around the merry-go-round for the successive operations. The housing is placed on a trunnion-type fixture. The studs are inserted and then the gear set is assembled in place. Shims are packed in, the nuts are tightened and the unit is inspected.



A Revolving Table or Merry-Go-Round Is Provided for Assembling the Rear Axle Main Drive Sets, the Successive Operations Being Performed as the Table Revolves

Then a driver is applied for testing, and the unit is taken from the merry-go-round to an adjoining test booth. Separate merry-go-rounds are provided for Cadillac and La-Salle gear sets. There are similar merry-go-rounds for the transmission assembly.

Rear axle units are assembled progressively on a moving plate-type conveyor approximately 50 ft. long, on which are mounted cradle-type fixtures on 6-ft. centers. The rear axle housing is placed on the cradle, the brake mechanism is assembled, the gear set is attached and other parts are added, all operations being done while the conveyor is in continuous motion. Gear sets, after testing, are placed on a sliding rack at the side of the axle assembly conveyor, where they are within easy reach of the men employed on the axle assembly line.

The completed rear axle assembly is discharged from the conveyor to an inclined table. It slides down this to a point where a carriage operated by an air cylinder delivers it to hooks of a carrier suspended on 8-ft. centers from an overhead endless chain conveyor. Each carrier has two pairs of hooks, one for the rear axle and the other for the front axle, so that a carrier can be used for either axle, although both axles are not placed on the carrier at one time.

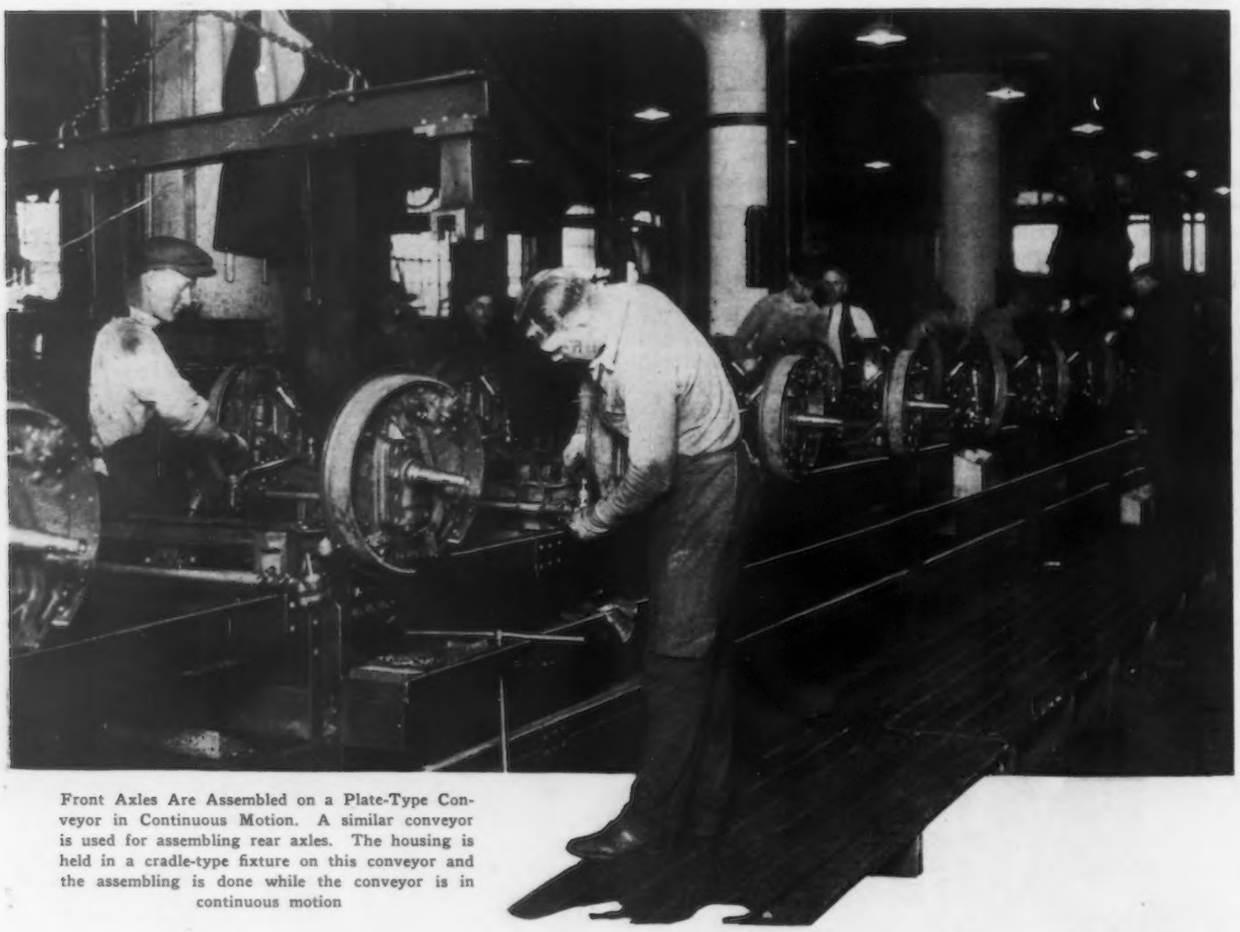
Front axles are assembled on a plate conveyor 66 ft. long. The I-beam part of the axle is placed on a fixture, and the axle is built up while the conveyor is moving. The conveyor has variable-speed adjustment through a Reeves drive, the speed being determined by the number of axles to be made in a day. A checking fixture is suspended from a monorail above the conveyor.

Chain Conveyor Carries Axles to Chassis Line

Both front and rear axles, after assembling, are carried on the endless chain conveyor through a paint booth, where they are sprayed with a priming coat. They continue on the conveyor through a drying oven 110 ft. long, in which they stay 45 min. at a temperature of 325 deg. Fahr.

The axle conveyor, on leaving the oven, goes down an incline at the side of an inner court, carrying the axles from the third floor to a point near the chassis assembly line on the first floor. Here monorail hoists pick the axles off the conveyor, the front axle being carried directly to the assembly line. The rear axle undergoes one operation before reaching that line—putting on the torque tube.

Front axle steering knuckles are handled from operation to operation on an overhead endless chain conveyor 240 ft. long. There are over 20 machine operations on the knuckles. This conveyor completes a circuit of the department, one line passing over a row of machines and the other between two rows. Its installation, by eliminating old methods of handling work in shop boxes at the side of the machines and moving it from one to another in trucks, has provided space for an additional row of machine tools. The work is suspended from the conveyor on hooks on 2-ft. centers. The only handling by truck in this department is in bringing the rough parts to the first machine.



Front Axles Are Assembled on a Plate-Type Conveyor in Continuous Motion. A similar conveyor is used for assembling rear axles. The housing is held in a cradle-type fixture on this conveyor and the assembling is done while the conveyor is in continuous motion

Another departmental conveyor is in the axle shaft department. Here a conveyor 270 ft. long, similar to that used in the steering knuckle department, runs between the rows of machines and delivers the work for successive operations.

Connecting rods are handled from operation to operation by a two-way roller conveyor in front of the machines and behind the operators. These are stacked on wooden trays, 200 on a tray, and loaded trays can be stacked above each other. At about every 20 ft. in the roller conveyor there is a narrow opening, providing a passageway for the workmen. Formerly the connecting rods were carried from one operation to another on pipe racks. Now pipe racks are used only at the machines during the finishing operations and for

carrying the rods to the point of inspection and to the motor assembly department. When former handling methods were used the floor was badly littered up with work, and it was difficult to keep track of stock.

Making Room for More Machines

Camshafts are handled from operation to operation on an overhead endless chain conveyor 600 ft. long, built in two sections, these being separated near the center on account of a heat-treating operation. Formerly there was space in this department for only three lines of machines, but the conserving of space by the use of the conveyor has provided room for an additional line of machine tools. Formerly there were 3000 to 4000 camshafts on the floor or on trucks going through the various operations in this department. This number has been greatly reduced.

Another overhead conveyor is used for carrying crankshafts over a main traffic aisle, a distance of 300 ft. from

An Overhead Conveyor 240 Ft. Long Has Replaced Shop Boxes for Moving Steering Knuckles from Machine to Machine

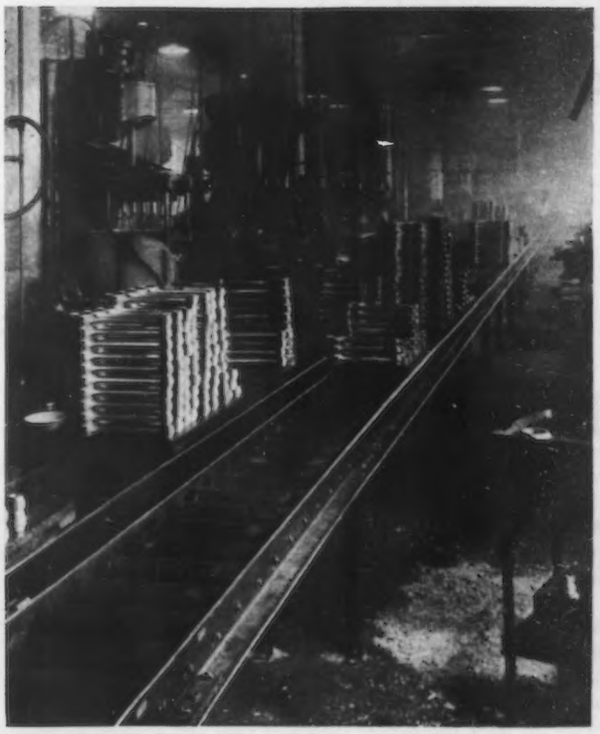
the last rough-grinding operation to the point of the first finishing operation.

Designed by the plant layout division of the Cadillac tool engineering department, the conveyors described were built by Detroit conveyor builders.

Research Aids New England to Cut Manufacturing Costs

Compelled to meet strenuous competition in a prolonged buyer's market, New England manufacturers, deprived of the advantage that they formerly enjoyed through plentiful water-power, are turning in increasing numbers to research as a means of cutting costs and improving products. Machine tool companies, textile weaving organizations, shoe manufacturers, paper mills, small arms makers, paint manufacturers—all are taking advantage of applied research to simplify and standardize products and processes of manufacture, frequently with amazing economies.

A brief history of the accomplishments of 28 New England companies through this method is contained in a booklet, "Use of Research in Standardization and Simplification" published by the Policyholders Service Bureau of the Metropolitan Life Insurance Co., 1 Madison Avenue, New



A Two-Way Roller Conveyor Is Used to Move Trays of Connecting Rods Between Machines. The conveyor takes the place of pipe racks formerly used

York. The brochure contains a part of the compiled data on research in industry gathered during a comprehensive survey of New England industry. It is arranged in four sections, each representative of a particular method of attacking the combined problem of simplifying and standardizing manufacturing processes.

An Endless-Chain Overhead Conveyor 600 Ft. Long Carries Camshafts from One Operation to the Next. Enough space has been saved by the elimination of trucks formerly used in handling work from machine to machine in this department to make room for the installation of a fourth line of machines

"Ruthless Buying" Declared Unsound

George H. Charls, President National Association of Flat-Rolled Steel Manufacturers, Reminds Purchasing Agents That They Have a Part in the Prevention of Uneconomic Conditions

PURCHASING agents should set themselves against "ruthless buying" and the consequent price demoralization from which various branches of the steel industry have suffered. This thought was emphasized by George H. Charls, president National Association of Flat-Rolled Steel Manufacturers, in an address before the National Association of Purchasing Agents at its sixth district convention in Toledo, Ohio, on Oct. 2.

"It may be predicted," said Mr. Charls, "that the time will come when no reputable buyers will be guilty of the irrational policies pursued in some quarters today. The ablest buyers will be those who possess a true understanding of their responsibilities in buying, and in obtaining the best price for their companies they will have the wisdom to know that the lowest price may be the worst price—a menace to the prosperity of industry and a threat to the best interests of their own companies.

"The managing executive, responsible for a corporation's policy, who assumes it is right to bring all pressure to bear upon his purchasing department to secure the lowest price possible in mass buying, is doing business as it was done 3000 years ago. Such a policy is a derelict of the past. There is a new order of things—a modern understanding of economic law—a recognition of the fact that the prosperity of an industry depends upon the prosperity of the whole and that no man can live unto himself alone.

Calls Insistence on Unreasonably Low Prices "Profiteering"

"Any industry which is profiteering at the expense of and to the serious detriment of another primary industry by unscrupulously insisting upon unreasonably low prices will eventually reap what it has sown, in exactly the same manner as the seller who profiteered when conditions were reversed has always suffered his just punishment. The managing executive and the purchasing agent will no longer be excused for not recognizing in advance the economic effects of their acts.

"It has become an accepted principle in industry that stabilization in demand, production, wages and prices is to be preferred always to the wide and wild fluctuations from high peaks to deep valleys.

"It is also being accepted with the same certainty that the unsavory price cutter, with his secret rebates, confidential arrangements and ignorance of economic reactions, is a pernicious influence in any industry, to the buyer, the seller and the public alike—an unsafe, unsound opportunist with nothing to sell but a price. Such a seller does not know that he is overestimating the transient advantage of cut prices, that the secret rebate of today is the published price of tomorrow, that price cuts merely precipitate like cuts by all competitors and bring about a lowering of the net income of the industry without anyone being the gainer. Herein lies one of the reasons why prosperity does not stay with us always.

"Even those who profligately are taking advantage of the steel industry's dilemma must in all fairness commend the patience and fortitude with which it is sacrificing profits to avoid following the example of other industries which have resorted to a cut in wages, with the natural consequence of reduced purchasing power of their employees. In this respect, at least, the steel industry is proving itself worthy of the leadership accredited to it."

Mr. Charls compared profits of the steel industry, at an average of 5.22 per cent in 1927, with those of the automobile industry, at 28 per cent, and the return for all capital in industry, estimated at 10 per cent. He predicted that the steel industry this year will show the same or a little more than the average return in 1927, notwithstanding increased production.

"The steel industry asks no quarter," he said; "it is not appealing for Government protection or legislation to take care of its surplus. In the last few years it has spent hundreds of millions to reduce the cost of making steel; it has gone the limit to meet the demands upon it. If it has resorted to mergers, it is because in no other way could it assure commensurate return on its invested capital.

Time for Large Buyers to Think

"Certain executives and buyers, often by adroit, inferential misrepresentation and even falsifying, are making futile the efforts of discriminating buyers who are withholding unwarranted pressure. Such buyers, and not the steel industry, will be responsible for the consequences. It is a fair warning that it is time for the mass buyers of steel to stop and think. Obviously, they cannot insist on paying a higher price than they are offered, but they can, in their own interest, recognize that steel is being sold too cheaply and give the steel industry fair opportunity to extricate itself from its serious predicament."

Too-Exacting Specifications Mean Losses

An instance of the loss imposed on the sheet steel industry was cited by Mr. Charls in the exacting specifications of buyers. It has come to the point, he said, that "ordinary quality is rejected, extraordinary quality is questioned, superlative quality is merely acceptable and perfection is demanded.

"While it is praiseworthy of Americans that their demand for progress and improvement in performance and style is insistent and insatiable," he added, "there must be reason in all things and these admirable qualities must not lead to extravagance and loss.

"Only the wonderful ingenuity of the research departments of the steel producers in studying the effect of grain growth and its relation to ductility and tensile strength has made possible the great saving in deep-drawing cost. One does not have to go very far back to a time when such direct deep-drawing operations were inconceivable, and frequent reheating to the detriment of the surface was necessary. Great savings and utilities have been effected by fine qualities of deep-drawing, flat rolled steel, but there are practical limitations which must be recognized. The impractical specification results in unnecessary loss.

"A worth while saving in the cost of flat rolled steel could be made if the purchasing agent, representing the designing engineer and the production and inspection de-

partments of the fabricators, could meet with a committee of flat rolled steel manufacturers to adopt practical and reasonable specifications and standards covering the different grades of flat rolled steel used in their industry.

Buyer Should Know Mill Practice

"The purchasing agent should have very definite knowledge of what constitutes practical mill practice and should use his influence to have his designing and production departments adopt standards and specifications which are reasonable and practical, and he should permit no fanciful ideas of specifications or designs to impose undue losses and unwarranted hardships upon the producer of steel or in his own factory operation."

Mr. Charls said that the question of gages of flat rolled steel becomes more involved each year. A greater knowledge of gages was urged. Unnecessary confusion would be eliminated by the use of the United States gage, expressing the true decimal thickness of each gage. A movement to concentrate on the actual thickness of steel under the United States gage would be of great benefit to the producer, the fabricator and all other consumers.

Airplane Makers Plan for Mass Production

Uncertainty as to Trends in Design and Need of Standards Are Checks to Rapid Transition from Present Methods

DIFFICULTIES besetting the manufacture of airplanes in quantity, or under mass production conditions, were told at a recent meeting held under the auspices of the American Society of Mechanical Engineers at Wichita, Kan. Among the papers submitted were one by E. E. Porterfield, Jr., American Eagle Aircraft Co., and one by Walter H. Beech, president Travel Air Mfg. Co., Inc., Wichita, Kan.

Must Settle on Type of Motor

Although we have promise of new production motors in adequate quantity, and at prices which will permit their use in the medium and lower priced plane, Mr. Porterfield said we are still struggling with the problems arising with our present motor supply. In the first place, no single new production power plant has proved itself to be outstanding. In fact, no two or three engines have developed what might be called public preference. It has, therefore, been necessary for the manufacturer to diversify production to satisfy a wide range of public demand. The result is reduced production and increased production costs.

The motor situation, he added, is largely duplicated in much of the materials used in plane construction. "The industry has actually grown so fast within the past two years that the sources of material have proved entirely inadequate. The manufacturer, unfortunately, has been entirely dependent upon independent sources for practically his entire list of materials used in plane construction. However, whereas a year or two years ago, the business of supplying airplane materials was incidental to other lines of business, we have today a group of organizations handling airplane supplies exclusively, or specializing in the materials our industry demands.

"We have found it almost impossible to gage public demand," he continued. "Fortunately, so far, we have underestimated it. Fortunately, I say, for such a condition leaves us financially safe for the moment. But it adds to our problem. Public demand is calling upon us early for large scale production. Still, we find ourselves with many of our initial problems unsolved and with our policies consequently undetermined. The industry is still in its formative period, even though we may say that we are approaching a close of that stage."

Design Trend Not Yet Clear

As a result, Mr. Porterfield said, we are facing the problem of constantly increasing production without being sure of the ground over which we must travel. "None of us knows what the trend of public demand may take a year from now—or even a month hence. We haven't by any means completed our engineering and research work. We are not by any means satisfied with our present product and present methods, satisfactory as they may be. Therefore, no manufacturer cares to invest heavily in machinery and equipment necessary to make large scale production possible. As a result, we are faced with the alternative of forcing production through the continued use of our present methods, namely, through hand work, or small machine tool work, upon materials provided through outside sources."

In concluding he agreed that the continued success of the industry demands the use of efficient machinery for large scale production. Also there must be standardization of product, of methods and of materials. "The manufacturer obviously must cease to experiment with a dozen different types of planes and motors. He cannot hope to continue, as he has in the past, a system which makes practically every ship an individual production problem."

Why 140 Airplane Makers Today

Mr. Beech pointed out that anyone with a few tools, an acetylene tank and blow torch, some steel tubing and an engine on order can start "manufacturing" airplanes. This condition is unfortunate, he argued, because it permits many people to enter the business who are not adequately equipped in experience and financial backing, and accounts in part for the existence of some 140 or more airplane companies in the United States today.

At present there are 15 departments in the Travel Air factory, each in charge of a foreman and a few with sub-foremen. These departments are: Welding, two fuselage assemblies, fuselage paint, wing paint, milling, wing assembly, final assembly, testing, maintenance, transportation, office, engineering, stockroom, first aid and safety.

Procedure in Travel Air Factory

"Let me now for a moment trace the production of a ship through our factory," said Mr. Beech. "At the west end of factory A the fuselage is begun. Tubing is drawn out of the stockroom nearby, cut to the proper lengths on a tubing saw, welded up on jigs, the engine mount built up and bolted on. The fuselage then passes down the line through the fuselage assembly department. The fitting department occupies the side of the building at this point. Here the completed fittings are assembled on the fuselage. The wire department occupies a balcony on one side, and the upholstering department occupies a balcony on the other side. The purpose of these balconies is to concentrate the parts departments near the assembly department,

see that wires, fittings, etc., will not have to be moved more than a few feet before they can be assembled on the ship.

Next the engine is installed in the plane and the cowling and tanks are added at a point opposite the sheet metal department. The fuselage is then covered and passes into the dope room. Dope and paint are sprayed on and the fuselage passes out into the final fuselage assembly department. Here the landing gear, tail surfaces and center section are assembled.

Factory B abuts factory A. Passing to the far end of factory B, we find the mill room. Here lumber is milled to the proper size and shape for wings, turtle backs, and cabin framework on the monoplane. The parts are assembled in the wing assembly department, which joins the mill room. The fittings are added and the wings covered. The wing then passes into paint and dope room No. 2.

The completed wing is moved to the final assembly and rigging department, where it is dropped on the fuselage, which has been moved across the court from factory A. After the ship has been rigged, it is given a final inspection and then test flown.

When More Metal Will Be Used

As to the production methods of the future only a guess can be made. We feel the use of machinery will increase and as a result metal will enter into the construction more and more. Metal wings will be justified as soon as production amounts to a scale which permits the investment in the necessary equipment for their construction. Machined fittings will replace welded fittings, when the quantity of fittings produced is such that the machinery necessary to produce them will pay for itself.

Improved Die Steels for Aluminum Die Casting Industry

ABOUT six years ago it was generally accepted that the question of die steels was the "neck of the bottle" in the aluminum die casting industry, writes Sam Tour in *Mining and Metallurgy* for September. Dies lasted for an average of some twenty thousand castings. Before replacing a die it was customary to make thousands of castings from it which had to be ground all over in order to remove fins left by numerous die cracks. For example, dies for making waffle grids would show cracks after only a few thousand castings and seldom was it possible to make more than 10,000 before replacing the impression block. Other difficulties were warping, and the growing or shrinking of the steel dies during the heat treatment, resulting in mismatch of the two halves.

The industry was then using a chrome vanadium steel. It was the general understanding, gained from such unknown source, that nickel steels were not satisfactory for dies due to the solvent action of aluminum, and that tungsten steels would not withstand the peculiar type of thermal fatigue encountered. About four years ago both of these general understandings were proved to be false. Several new steels were developed, one containing nickel and the others containing considerable tungsten and chromium.

Larger dies are now being made than ever before. Waffle grid impression blocks give from 50,000 to 100,000 castings before being replaced. Automobile steering wheel spider dies which used to last only for 20,000 castings now last for 70,000 to 100,000. It is only necessary to grind a very small percentage of the aluminum die castings produced.

These new steels are not perfect. They have certain inherent faults such as brittleness, but they are a vast improvement over the old chrome vanadium steel. It is hoped that the present steels will be further improved or that still newer types will be developed that will retain the good qualities of the present steels and will not have their faults. Future progress of the industry however will not be seriously hampered by steels for several years at least. There are other questions in the industry now that are "the neck of the bottle."

Advantages and Limitations of Chrome-Irons for Condenser Tubes

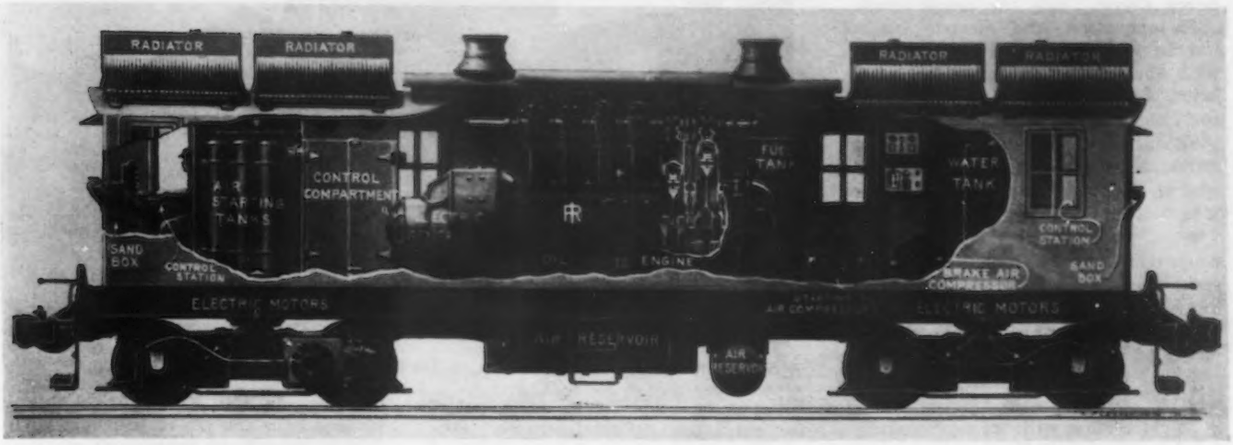
REALIZING that steam superheaters are subjected to more severe working conditions than high-pressure boiler drums, Brown, Bayley's (Sheffield, England) research laboratories are studying the action of tubing under working conditions. Three classes of metal are under observation, a nickel-chromium-iron alloy, a chromium-iron alloy and mild carbon steel.

Tests are carried out by passing steam through the tubes, the steam entering at a temperature of about 750 deg. Fahr. and leaving at about 1000 deg., the temperature of the tube being kept at about 1000 deg. Fahr. by passing an electric current through it. Tubes of the alloy irons were found free of attack after several weeks. The result with mild steel, however, was unsatisfactory. The tests proved the immunity of nickel-chrome-iron and straight chromium-iron alloys from oxidation, and assuming such heat-resisting tubes could be manufactured at a reasonable price, it would enable higher steam pressures to be used with safety. Previous experiments had proved similar reactions to hot furnace gases.

Whether tubes of such alloys will stand high internal pressure at high temperature has yet to be proved. Prof. F. C. Lea, speaking before a recent meeting of the British Association for the Advancement of Science, said that experiments dating several years back proved without doubt that a metal which had an ultimate strength of 45,000 lb. per sq. in. in tension when tested in the usual way at room temperature would break at 12,000 to 14,000 lb. after exposure to a temperature of say 900 deg Fahr. for several weeks. Special anti-corrosion steels have a much longer life than plain carbon steel at the higher temperatures, but even with them the working temperatures ought to be considerably below 1500 deg. Fahr.

Recent experiments had shown that even some of the best steels for resisting high temperature would, at a temperature of 1500 deg. Fahr., have their strength reduced from, say, 33,000 lb. to 4500 lb. per sq. in. in 53 weeks, and he had estimated that in 1½ years the strength would be reduced to 2200 lb. per sq. in. Therefore, it was apparent that above an undefined temperature between 900 and 1500 deg. Fahr., small changes of temperatures meant very considerable changes in the limiting creep stress.

Methods of test relating to electrical insulating materials have been published by the American Society for Testing Materials in a book of 155 pages illustrated. This has been issued to present under a single cover what the society believes would be important to those interested. The committee active in this work has been engaged for several years in drawing up methods of testing and improving upon those in use. The pamphlet gives what are considered the best methods available.



Steel Plants Using Oil-Electric Engines

Industrial Service Follows Experiments by Railroads for Yard Switching—Savings in Costs

THE comparatively recent development of the oil-electric locomotive is of interest not only because it offers a potentially large field for the use of steel—a factor of no mean importance in view of the small purchases of steam locomotives in the last few years—but because of its adaptability to the needs of large industrial plants, such as those of the steel companies.

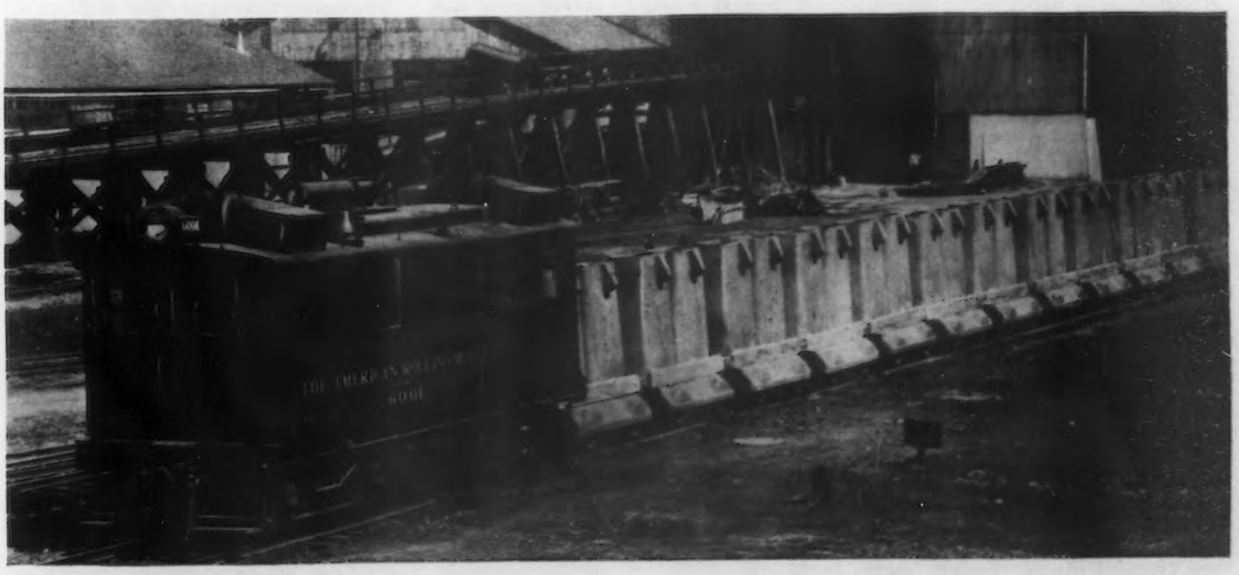
Late last year the American Rolling Mill Co. ordered one of 300 hp. capacity for trial at its Ashland, Ky., plant. Since then the company has bought three more of the same size for the Ashland plant, and one of 600 hp. capacity for its Middletown, Ohio, plant. The Donner Steel Co., Buffalo, purchased a 300 hp. engine in April of this year, following with an order for three additional units.

The hourly operating cost of an oil-electric locomotive will vary, it is stated, according to the work assigned. For the 300 hp. engine, it varies from 20c. to 40c. per hr., and for one of 600 hp. from 28c. to 50c. per hr. These costs are contingent upon the prices for fuel and lubricating oils in the localities in which the engines are operating.

The oil-electric engine first demonstrated its possibilities in marine propulsion, but up to the present its application to railroad propulsion has been relatively limited. The automobile has shown the efficiency of the internal combustion engine, while the electric drive in its various applications has been recognized as offering an easily controlled form of power transmission. It has been through a combination of these two principles that the oil-electric engine has been evolved.

Development work was undertaken by three companies acting in cooperation. The General Electric Co., the American Locomotive Co. and the Ingersoll-Rand Co. supplied the varied types of experience required in electrical engineering, locomotive design and construction of the internal combustion engine. The engine finally developed combines one or more Ingersoll-Rand oil engines direct-connected to a General Electric d.c. generator, which supplies electrical energy to traction motors mounted on the trucks. The oil engine is of the vertical, six cylinder, four cycle, single acting, variable speed type, having direct fuel oil injection. Fuel oil injection is accomplished by means of two spray nozzles in each combustion chamber. To these nozzles oil is delivered under pressure by an injection pump driven from the main shaft. No compressed air is used for fuel injection. Ignition is produced by the heat of compression only.

Other features of the oil engine include a distributor timed to admit oil to the spray nozzles of each cylinder in their proper firing order; a lubricating system entirely enclosed and of the force-feed type, and a closed cooling water system, the water



A 300-Hp. Oil-Electric Engine Hauls Ingot Molds at the Plant of the American Rolling Mill Co., Ashland, Ky.

being circulated by a centrifugal pump driven from the crank shaft.

In operation, the electric control handle is set forward or backward, with the motors in series for speeds below 5 miles per hr. or in parallel for speeds above 5 miles per hr. The position of the throttle lever determines the power delivered by the engine, and the generator and motors transmit the power to the driving wheels, automatically adjusting the proportion of tractive effort and speed to the load on the locomotive, and automatically changing these proportions to suit the varying requirements of acceleration or grade.

While the development of the oil-electric engine to date has been chiefly in connection with its serviceability for low-speed switching service, it is believed to offer future possibilities for main line railroad service. One of 750 hp. capacity has recently been delivered to the New York Central Railroad for use on its Putnam division in New York State.

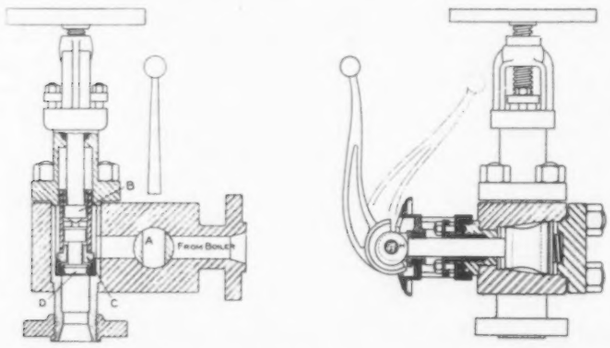
A 60-Ton Oil-Electric Locomotive in Service at Plant of Donner Steel Co., Buffalo

Tandem Blow-Off Valves Have One-Piece Body

BOILER inspection laws of most States demand the use of two valves in tandem in the blow-off line from a steam boiler. Ordinarily, two separate valve bodies are used. Generally one of the valves is of a special form designed to avoid or reduce erosion of the valve disk and seat by the hot water and sludge discharged at high velocity under boiler pressure.

The valve illustrated has been designed by the Cochrane Corporation, Philadelphia, to meet these exacting requirements. There are two main valves in tandem, as required by law, but both valves are combined in a single, forged-steel body. The valve nearer the boiler is of the rotating gate type, and in ordinary operation is intended to be opened before the main valve is opened and to be closed after the main valve is closed. The gate member is conical and is ordinarily held to its seat by a seating spring and by the water pressure.

So that it may be turned easily and without scratching of valve or seat, provision is made for lifting it from the seat before it can be turned. The valve member is a one-piece, stainless steel forging, which has been hardened and ground.



Two Sections (at Right Angles) Through the Valve Chambers, Both Being Closed. Boiler pressure is held by rotary gate A, by scaling valve C and by check disk D

New Close-Quarter Drill

A NEW gear-driven close-quarter drill with a two-cylinder double acting air motor has been developed by the Ingersoll-Rand Co., 11 Broadway, New York. It was designed for general drilling, reaming and tapping in close quarters. It weighs 41 lb. and is 9¼ in. long. The length of feed is 2½ in.

Minimum thickness of the machine has been secured by making it flat, the drill being practically the same thickness from spindle to cylinders. It can therefore be readily used in very cramped places. Smooth operation has been secured by arranging the pistons to act at right angles to, and in a plane with, the spindle; by using a counter-balanced crank and by using special gears for the drive.

Gears are built strong and rugged, their size and strength being increased as the load carried increases, until the final drive on the spindle is through a heavy herringbone gear, which gives a smooth and steady driving action. Anti-friction bearings of the ball or roller type are used throughout.

Three different spindles can be furnished, the standard spindle having a No. 4 Morse taper socket. A threaded spindle 1-11/16 in. in diameter, 12 threads per inch, to take square socket chucks or the Rich chuck, can be had. The third spindle obtainable is a Use-Em-Up spindle which has a No. 4 Use-Em-Up taper.

Flatness of This Close-Quarter Drill Is a Feature

Sharp Gain in Electric Power Production

Production of electric power by public utility power plants in the United States in August is reported by the Geological Survey at 7485 millions of kilowatt-hours. This compares with 7140 in July and 7010 in June. Water-power furnished a smaller amount in August than in either of the two immediately preceding months, representing about 41 per cent of the total in August, against 43 per cent in July, and more than 44 per cent in June. Correspondingly, the power produced by the consumption of fuels in August was nearly 10 per cent above July and 13 per cent above June.

Foreman Is Key Man in Safety Work

Department Head Is Largely Responsible for Safety Education of Workmen—Mechanical Handling Is Factor in Foundry

THAT the education of every person connected with the foundry to think, act and live safety is the keynote of accident prevention work in that department was emphasized by Nelson H. Kyser, safety engineer, Studebaker Corporation, South Bend, Ind., in an address before the metals section of the National Safety Council assembled in New York last week. This personal education, the speaker pointed out, should begin with cleanliness. "A clean orderly shop," he said, "means careful workmen and greatly reflects the quality of the product. If aisles and passageways are blocked or are strewn with foreign matter, the possibility of spilling a ladle filled with molten metal is greatly increased. If flasks are piled so that they may topple over, the hazard of crushing or badly lacerating a fellow workman is present. Teaching a man or allowing him to develop the proper and safe method of doing a job is also important. The employee should be cautioned against using a rusty skimmer or rod when skimming or stirring molten iron. The pouring of molten metal into moist ladles should also be cautioned against, as also should the watching of a mold up through the risers without the necessary goggles. Proper clothing must also come in for its share of consideration in the correction of unsafe practice in foundries."

The correction of unsafe foundry practice or the elimination of hazards caused by layout, the speaker stated, are just as important as personal education. In his opinion the more mechanical devices that are installed the less will be the possibility of accidents. "In the mechanical handling of raw stock," he said, "magnetic cranes can be brought into use for the pig iron and scrap, while hopper bottoms bins make a safer and easier way to handle the non-metallics. All the ingredients of the charge may be loaded into small cars, weighed and transferred to the charging floor untouched by human hands. This practice will eliminate crushing injuries and also the possibility of disablements caused by the strain of overlifting.

"After the charge is on the charging floor it should be mechanically dumped into the cupola. This method will avoid hand shoveling of the charge, where a man is apt to slip and fall into the mouth of the cupola. Serious thought should also be given to proper ventilation, as the gases on the charging floor are poisonous, and when ventilation is inadequate respirators should be furnished to the workmen. One of the most important applications of mechanical means is in the pouring of molten metal. If the conveyor system for carrying the molds could be installed universally one of the greatest foundry problems would be solved. If the mold could be placed on conveyors and transferred to a point 25 ft., or not over 50 ft., from the cupola and poured, relatively few men would be brought into the danger zone. The installation of this type of conveyor system would eliminate the inspection of long monorail systems, the danger of slop over would be cut to a minimum and the use of hand ladles would become obsolete.

"The shipping and grinding department should be in a separate room from the rest of the foundry. This room should be well lighted and ventilated and all workmen should wear goggles and hard toed shoes to avoid eye and foot injuries. The various tools should be frequently inspected for their suitability and condition. The use of chisels with mushroom tops is dangerous and should be avoided. The chipping room should be large enough to allow considerable distance between each chipper, as flying chips often cause injuries."

Much Depends Upon Foreman

The key position of the foreman in making safety work successful was stressed by Dominic Samuel, foreman tube galvanizing department, Campbell plant, Youngstown Sheet & Tube Co., Youngstown. He stated that, in eliminating the hazards of his department, he soon found that the attitude of the men was the most serious danger of all. This was gradually corrected by safety meetings, the posting of warning placards, and, most important of all, by individually talking to the men on the job and making certain that they knew how to do their work safely and right.

The responsibility of the foreman was also brought out in a novel manner in a debate between J. A. Voss, director safety and compensation, Central Alloy Steel Corporation, Massillon, Ohio, and Michael P. Grady, president Stark County, Ohio, Foremen's Club. In outlining the procedure for the organization of a safety campaign, Mr. Voss pointed out that the first move is to interest the management; second, the superintendent; third, the foremen, and, fourth, the workmen. The importance of educating the workmen, the responsibility of which depends largely upon the foremen, is evidenced by accident statistics showing that 25 per cent of accidents are preventable by safeguards and 75 per cent by education. Both men were agreed that one of the best ways of training the workmen to do their work safely is to call them together every two weeks and discuss safety problems.

Mr. Voss stressed the fact that, although the management and the superintendents may be ever so enthusiastic about safety, the foremen must be just as enthusiastic and must constantly plan and scheme to keep every man in their various departments enthusiastic. One way of doing this is by means of the safety committee, the members of which must at all times bear in mind that the prevention of accidents is one of their most important duties. Mr. Grady told of the reluctance of many foremen to place their best workmen on the committee. This attitude, it was explained, can usually be changed by demonstrating to the foremen that safety work is one of the most important factors in maintaining satisfactory uninterrupted production.

Safety as Aid to Department Efficiency

The value of safety work in maintaining the efficiency of a department was the main theme of an address by Philip J. Bowen, foreman annealing department, Michigan Steel Corporation, Detroit. "The first big step in making a safety plan successful," he stated, "is that every foreman know his own men. Knowing the men means that the foreman understands thoroughly their temperaments and characteristics. He should also do his best to gain their confidence by being consistent in his daily practices. He should make a thorough survey of his working equipment at the beginning of each day and see that all working implements are in good safe condition before the men start operations. This will show the employees that the foreman is sincere in his efforts to safeguard their lives and will have a striking effect upon their morale. It is often a good idea to give each man something to do, such as the responsibility for the inspection of some machine, and thus create an individual interest in the safety movement."

The new 6-stand 4-high, roller bearing continuous 13-in. skelp mill, which the National Tube Co. will install at its National Works, McKeesport, Pa., will be furnished by the United Engineering & Foundry Co., Pittsburgh.

Engineers Hold New England Meeting

Airplane Engines, Textile Machinery and Apprentice Training Included in Broad Program

WITH 10 technical sessions devoted to as many different topics, the New England Industries meeting of the American Society of Mechanical Engineers, held at the Hotel Statler, Boston, Oct. 1, 2 and 3, was of broad scope.

The sessions were under the auspices of various divisions of the society, and topics covered included materials handling, management, industrial education and training, machine-shop practice, aeronautics, railroads, and power. There were also meetings of the research and other committees, and outstanding among social events was a banquet and dance held on the evening of Oct. 2. Excursions to the plants of the General Electric Co., West Lynn; Ford Motor Co. assembly plant, Somerville; and the Gillette Safety Razor Co., Boston, were well attended.

Steel Makes Up Half the Weight of Aircraft Engine

Interesting data relating to the arrangement, selection of materials, manufacture, inspection of parts and application of the Wasp and Hornet engines to aircraft were given by A. Willgoos, chief engineer of the Pratt & Whitney Aircraft Co., Hartford, at the aeronautic session. The Wasp and Hornet engines are similar in design, 81 per cent of the parts being the same in both.

In discussing the weights of the various materials used in the Wasp engine the following percentages were given: Aluminum, 33.4 per cent; duralumin, 8.6; copper, brass and bronze, 3.64; rubber, paper, etc., 0.16; and steel and iron, 54.2 per cent.

"It is rather surprising to find that in a unit in which light weight is important, more than half of the weight is made up of steel," said Mr. Willgoos. "Aluminum and its alloys are used as far as possible, but for highly stressed parts there is often no advantage in their use. While aluminum weighs one-third as much as steel, it is not as strong as alloy steel and sections cannot always be increased to offset the reduced strength. For other parts extreme hardness is required and obviously this indicates the use of steel."

Inspection methods were described at length, the thoroughness and care of the inspection work being particularly emphasized.

Other papers at this session were "Air Transportation in Relation to New England," by Sumner Sewall, Colonial Air Transport, New York, and "A Review of Ball and Roller Bearings in Aircraft," by F. W. Mesinger, Norma-Hoffman Bearings Corporation, New York. S. W. Stratton, president of the Massachusetts Institute of Technology, presided.

Some of the methods employed at the Auburn, R. I., plant of the Universal Winding Co., were outlined by J. F. McEnneny, superintendent of that plant, at the session devoted to machine-shop practice. The high standards of engineering and manufacturing technique in textile machinery building were emphasized, engineering opportunities in this field being said to be equal to those of other branches of the metal working industry.

"Competition in the field of textiles is very keen and mill owners are demanding machinery that will speed up production and minimize the human factor," said Mr. McEnneny. This demand has meant, to many textile machinery builders, changes in design, materials and in manufacturing methods. Mechanism having a large number of small parts that must function and interchange in textile machinery used all over the world call for methods that assure accuracy and interchangeability of those parts.

Several special-purpose high-production machine tools developed by the company were shown by lantern slides, and inspection methods, starting with frequent check up of tools and equipment, were outlined.

Internal Grinder Development Reviewed

"Internal Grinding Development," a paper by Alden M. Drake, chief engineer of the Greenfield Tap & Die Corporation, Greenfield, Mass., described briefly the various machines brought out since hardened pieces began to be used extensively.

At first the pieces were ground in the engine lathe, using a home-made attachment. A bench lathe and a universal grinder with internal grinding attachments were made available later, these being followed by a "cup and cone grinding machine" developed by the Pratt & Whitney Co. The arrangement of this machine, as well as the Heald, Bryant, Landis and other internal grinders, was outlined.

Written discussion was submitted by J. R. Weaver, superintendent of manufacturing equipment, Westinghouse Electric & Mfg. Co., East Pittsburgh. The high speed and close accuracy of the modern internal grinder was commented upon in the general discussion.

"Proper General Management of Industry," a paper by Jerome R. George, vice-president Morgan Construction Co., Worcester, was presented by C. E. Davies, assistant secretary of the society, at a session held under the auspices of the A. S. M. E. management division. "In the end the public will decide whether or not industry is being properly managed," said Mr. George. "Generally speaking and in the long run, a manager of an industrial corporation who does not keep in mind the public relationship of his work will do harm to the public interest and to industry. On the other hand good management of public affairs will give business reasonable regulation and protect it against unfair attacks by selfish interests from within and without." Thirteen comprehensive aims and rules of general management were set forth in the paper.

The opportunity of the engineer in reducing the cost both of manufacture and distribution was emphasized by W. J. Fortune, assistant vice-president of the National Shawmut Bank of Boston, in a paper on "Progress in New England." The trend toward research in industry and in business was pointed out and in this connection Mr. Fortune said: "To the admitted ability of the New England manufacturer to sell, he is to a greater extent adding essential facts contributed by scientific research. The rule of thumb method is giving place to guidance by essential basic facts."

Apprentice Training at Lynn, Mass., Plant

Description of the apprentice system of the Lynn, Mass., plant of the General Electric Co., by Charles K. Tripp, supervisor of apprentices at that plant, was a feature of the session on education and training for the industries.

Four major courses are offered, machinist work, drafting, pattern making and molding. There are also four special courses, sheet metal working, steam fitting, testing and factory business. All courses are on a four-year basis. Apprentices taking the machinist trade, drafting, electrical testing or factory business courses are required to spend two years in the training room for machinists. After they have completed their term they are given an opportunity to work at the trade for which they show the most talent.

The machine shop is the principal training room and is laid out so that all apprentices start on the same class of work and under the same instructor. As soon as they have learned how to do an operation they are advanced to a different machine where they are required to do work of greater precision. There is no definite schedule of advancement in shop work, the work given an apprentice being determined by his ability and capacity. Most of the instruction is traditional.

The beginner is put at a machine with an apprentice who has learned to do a certain job to the satisfaction of the foremen. The apprentice acts as a teacher to the beginner, who when he has learned to do the work as well as his teacher, acts as an instructor to another boy. The boys are supervised by experienced instructors. Of the 12 shop instructors seven are graduates of the Lynn apprentice course, and five are journeymen machinists who are selected for their production ability, as well as their capacity for teaching. From 15 to 20 apprentices are under the supervision of each instructor.

After the apprentice learns to op-

erate the machines satisfactorily, he is given opportunity to apply his experience to the building of a jig, fixture or machine. All apparatus manufactured in the training room is selected from the different production and tool departments for its educational value rather than for its simplicity. The finished work is given rigid inspection by the general inspection department of the plant. It was stated that the amount of spoiled work is small, less than 2 per cent.

Results of different methods of selecting apprentices at the Scovill Mfg. Co., Waterbury, Conn., were given by W. S. Berry, director of training of that company, in a paper on "Experience in the Selection of Apprentices with the Aid of Tests." The studies described were begun in 1923 and the data given cover a period of four years.

Papers at the materials-handling session covered the handling of marine shipments of pulpwood and of materials in sugar refining. The mechanical handling of lumber was described at the wood industries meeting, at which a progress report of the society's special research committee on wood-working saws and knives was also presented.

Speakers at the banquet, which was well attended, included Dr. Ira N. Hollis, past president, and Charles L. Newcomb, vice-president of the society. Lieut. S. L. Willets, aeronautical division of the Department of Commerce, spoke on the development of commercial aviation, and Dr. Harrison E. Howe, editor of *Industrial and Engineering Chemistry*, discussed the "Place of Research in the New Competition," with special reference to developments in the field of chemistry. Charles C. Peirce, General Electric Co., Boston, was toastmaster.

Code for Buyers and Sellers Suggested

Conference Held Under Auspices of Purchasing Agents' Association Declares Mutual Confidence Is Greatest Need

THAT full confidence between buyer and seller is the greatest need of American business today was the expression of business executives at a meeting held recently at the Hotel Commodore, New York. The group consisted of R. W. Babson, Babson's Statistical Organization; L. F. Boffey, editor *Purchasing Agent Magazine*, New York; A. M. Bowman, purchasing agent, Humble Oil & Refining Co., Houston, Tex., and president National Association of Purchasing Agents; L. A. Jones, vice-president and purchasing agent, New York Power & Light Corporation, Albany, N. Y.; W. A. Marshall, president W. A. Marshall & Co.; W. W. Nichols, president Machinery Builders Society; G. A. Renard, secretary-treasurer National Association of Purchasing Agents, New York; R. M. Roosevelt, vice-president Eagle-Picher Lead Co.; A. L. Salt, president Graybar Electric Co., New York, and E. L. Shaner, editor *Iron Trade Review*.

It was the nucleus of a committee appointed at a conference last May of representative manufacturers, sales executives, purchasing agents, and business paper editors which had been called by the National Association of Purchasing Agents to consider the responsibilities of the purchasing agent for the lack of profits by many manufacturers.

In its deliberations, the committee brought out that the much-talked-of effective cooperation can only be based on mutual confidence. Sellers, for example, should be given fair estimates of future consumption needs in order to gage their production as far as possible and thus prevent radical fluctuations within their industry. Buyers, on the other hand, maintained that confidence in the seller's fairness, quality of merchandise, delivery promises, prices, etc., must also be established as a basis for cooperation. Both sides agreed that organization policies were too often entirely concerned with selfish interests and that an industrial code to which both buyers and sellers could subscribe should be made a basis for confidence and cooperation. Such a code, previously prepared by a group of the National Association of Purchasing Agents and indorsed by a number of very large organizations to whom it had been submitted, was unanimously adopted. It is the aim of the committee to secure widespread adoption of the code by representative buying and selling factors throughout the country.

Standards in Buying and Selling

The platform of sales and purchasing methods follows:

Unnecessary sales and purchasing expense is an economic waste, a tax on legitimate industry. Its elimination will assure satisfactory profits to the producer, economy to the consumer, and greater efficiency in commercial relations.

We recognize that the concern which buys must also sell, that buying and selling are companionate functions, that sound commercial transactions must be mutually profitable, and that cooperation between buyer and seller will reduce the cost of purchasing, sales and distribution with consequent benefits to industry as a whole.

In furtherance of these principles, we subscribe to the following standards in our buying and selling.

First: To buy and sell on the basis of value, recognizing that value represents that combination of quality, service and price which assures greatest ultimate economy to the user.

Second: To respect our obligations and neither expressly nor impliedly to promise a performance which we cannot reasonably expect to fulfill.

Third: To avoid misrepresentation and sharp practice in our purchases and sales, recognizing that permanent business relations can be maintained only on a structure of honesty and fair dealing.

Fourth: To be courteous and considerate to those with whom we deal, to be prompt and businesslike in our appointments, and to carry on negotiations with all reasonable expedition so as to avoid trespassing on the rights of others to the time of buyers and salesmen.

Fifth: To avoid statements tending to injure or discredit a legitimate competitor, and to divulge no information acquired in confidence with the intent of giving or receiving an unfair advantage in a competitive business transaction.

Sixth: To strive for simplification and standardization within the bounds of utility and industrial economy, and to further the development of products and methods which will improve industrial efficiency.

Seventh: To recognize that character is the greatest asset in commerce, and to give it major consideration in the selection of customers and sources of supply.

Eight: To adjust claims and settle disputes on the basis of facts and fairness, to submit the facts to arbitration if a mutual agreement cannot be reached, to abide by the decision of the arbiters, and to resort to legal measures in commercial disputes only when the preceding courses prove ineffective.

Ninth: To provide or accept no gifts or entertainment in the guise of sales expense, where the intent or effect is to unduly prejudice the recipent in favor of the donor as against legitimate competitors.

Tenth: To give or receive no bribes, in the form of money or otherwise, in any commercial transaction, and to expose commercial bribery wherever encountered for the purpose of maintaining the highest standard of ethics in American industry.

To Hold International Conference on Bituminous Coal

More than a hundred speakers, representing 12 countries, are tentatively listed to present papers at the second International Conference on Bituminous Coal, to be held under the auspices of the Carnegie Institute of Technology in Pittsburgh, Nov. 19 to 24, according to a preliminary program announced by President Thomas S. Baker. About 60 of the speakers will come from outside the United States.

According to the plans, 10 major subjects are listed for discussion, in addition to addresses of a general nature to be presented by Lord Melchett (Sir Alfred Mond), the British capitalist; Georges Claude, eminent French scientist; Prof. Fritz Hofmann, the German scientist, who makes synthetic rubber from coal; Dr. F. zur Nedden of Germany; F. G. Tryon of the United States Bureau of Mines, and others.

Major subjects to be discussed, it is expected, will include Pulverized Fuel, Gas Production, Liquefaction and Hydrogenation, Fertilizers, Origin, Composition and Classification of Coal, High - Temperature Carbonization, Combustion in Furnaces, Purification and Cleaning, Tars and Oils, and Low-Temperature Processes.

Opposition to Canadian Tariff Changes

Dominion Consumers Appear Before Board to Protest—Steel Companies Seek Protective Duties

OTTAWA, ONT., Oct. 9.—With the submission of the revised brief of the Algoma Steel Corporation of Sault Ste. Marie, Ont., for upward revision of the tariff on pig iron, structural steel, and abolition of prevailing drawbacks on specially treated steel and alloys, before the Tariff Advisory Board on Oct. 2, another case was placed on the agenda of adjourned hearings to be considered during the November sittings of the board.

Particular opposition to the final disposal of the case was voiced by R. E. Musselman, representing the Ford Motor Co. of Canada, who stated that the automobile industry was greatly concerned as to the effects of the proposed tariff revision. He urged that time be given for full study of the application. Others supported Mr. Musselman.

Objection to further adjournment was raised by Norman Guthrie, chief counsel Algoma Steel Corporation. The reference, he pointed out, had originally been placed before the board nearly two years ago and to ask for a delay at this stage "savored of an attempt to defeat the desires of the applicants to bring the matter before Parliament during the forthcoming session." Mr. Guthrie also took exception to the filing of what he termed eleventh hour opposition briefs. This remark was provoked when John Blain, who spoke on behalf of the Ontario steel producers, announced he had been asked to prepare and file an opposition brief at a later date on behalf of the British Association of Steel Manufacturers.

Particular opposition was voiced against the incorporation of the following proposed clause in the Canadian customs tariff:

> Steel in all forms or shapes, by whatever process made, and by whatever name designated, whether cast, hot or cold-rolled, forged, stamped or drawn, containing nickel, cobalt, vanadium, chromium, tungsten, molybdenum, also manganese or silicon when present in the steel in excess of 1 per cent manganese or 0.50 per cent silicon, or any other metallic content used in alloying steel—35 per cent ad valorem and British preference.

The general contention of the opposing interests was that such a provision would seriously limit the source of supply, increase prices and encourage substitution of alloy steel.

Railroads Oppose Restricting Steel Sources

Robert Job, speaking for the railroads, stated that it was essential to have safe, reliable steel for the manufacture of vital parts of locomotives and coaches. To compel the railroads to purchase inferior alloys or steel, would be to endanger the traveling public. He emphasized the importance of leaving the present sources of tested alloy open to the railroads.

J. Robertson, for the Granby Consolidated Smelting Co., supported Mr. Job. He declared that alloys now imported were the result of years of experimentation and research. He expressed the belief that Canadian producers had not yet proved that a process of treatment superior to that given imported alloys had been evolved.

Referring to the objection that the application threatened the British preferential tariff, Mr. Guthrie declared that the clause in question probably had been hastily drafted and assured the board that his clients were prepared to modify their demands to meet the objection.

The Algoma Steel Corporation asks that the higher rate of duties on structural steel under 35 lb. per yd., and which the Customs Act provides to extend to larger sizes when all sizes up to 120 lb. per yd. are made in Canada, be now applied to all sizes already produced in this country, even though the complete range is not yet manufactured here. Several companies selling structural steel, while not opposing this application, thought there would be a lot of trouble with the customs authorities because each size of beams imported would necessitate finding out whether it were made in Canada before knowing whether it would come in under the low or the high duty. It was also pointed out that orders for structural steel are often placed six months ahead. The prices might be based on the lower tariff, and in the meantime some Canadian firm might start making the particular size, with the result that the higher rate would at once come into effect. Chairman Moore suggested that the representatives of the companies affected get together with the Algoma company and endeavor to straighten out these difficulties.

Higher Rate on Pig Iron Opposed

The Algoma company's application for higher rates on pig iron brought definite opposition. The company claimed that the rates it was forced to accept for pig iron in face of United States competition gave it no profit at all. The increased duty was asked to give the company a fair profit.

A representative of the Canadian Car & Foundry Co., Montreal, told the board that in the making of cast iron pipe it would be impossible for his firm to pay more for pig iron than at present. If the price was increased, his company would have to close down that section of its operations. The National Iron Corporation, Toronto, and the Dominion Foundries, Ltd., took a similar position. Counsel for the Algoma company thought the situation should be solved by these companies coming before the board for an increased tariff on their products. The chairman suggested that a schedule giving the ultimate effect of the increase asked for would have to be submitted if there was any hope of Parliament giving the relief asked for.

The Algoma Steel Corporation based its claim upon the contention that Canadian iron and steel products are faced with exceptional handicaps in meeting foreign competition. Particular relief is sought to offset importation of pig iron, spring and axle steel for automobiles, alloy and structural steel. It is also urged that certain drawbacks be abolished, while an application is made for the imposition of a duty of 75c. a ton on imported coke. According to the brief, the Canadian iron and steel producers are faced with relatively higher costs of raw material, labor or transportation to consuming markets than foreign competitors.

Opposing the application were leading interests which would be directly affected by higher tariff on the commodities listed.

Philadelphia Scrap Dealers Organize

A group of iron and steel scrap dealers in the Philadelphia district, who met at the Manufacturers' Club, Philadelphia, on Oct. 2, organized a chapter of the Institute of Scrap Iron and Steel and elected John R. Briggs, Henry Potts & Co., chairman. Other officers are: Harry A. Kirshman, Allegheny Iron & Metal Co., vice-chairman; J. B. Partridge, Jr., Allen R. Hoffer Co., secretary, and R. M. Marshall, Marshall Iron & Metal Co., treasurer.

The Philadelphia chapter is the second organized in the past week. One in New York was formed with David Strauss, Continental Iron & Steel Co., chairman. A State conference of dealers in Connecticut is scheduled for Oct. 10, at the Bond Hotel, Hartford.

Applications for membership in the Institute of Scrap Iron and Steel, 11 West Forty-second Street, New York, have recently been received from the Allegheny Iron & Metal Co., Bishop & Co., A. Hitner's Sons Co., Allen R. Hoffer Co., Henry Potts & Co., Frank Samuel & Co., Louis J. Gedicke, Marshall Iron & Metal Co., E. Perez, West Philadelphia Scrap Iron Co., Oscar H. Tompkins, M. J. Hunt's Sons, Malloy & Schreiner, all of Philadelphia; Mayer Pollock Co., Pottstown, Pa.; H. Sofranscy Co., Allentown, Pa.; Valley Iron & Steel Co., Allentown, Pa.; H. Weiner & Co., Pottsville, Pa.; Fechheimer Steel Co., Allentown, Pa., and E. L. Halstead Co., Norfolk, Va.

Price Cutting Costly in Reinforcing Steel

Margin of Profit Growing Smaller in Industry in Spite of Increased Sales and Better Cooperation with Mills

GRATIFYING progress in securing the better cooperation of mills and in the extension of markets for concrete reinforcing steel was brought out at the semi-annual meeting of the Concrete Reinforcing Steel Institute, held at Shawnee-on-Delaware, Pa., Oct. 1 to 3. At the same time George E. Routh, Jr., Kalman Steel Co., Chicago, president of the institute, called attention, in his semi-annual address, to the deplorable condition of the industry's sales activities which has resulted from price cutting and lack of sincerity between competitors.

"I want to stress the need for serious thought on the part of all members toward this condition," said Mr. Routh. "We have too many detective salesmen seeking cut prices, with the result that the buyer is given every opportunity to put across the idea that he has a cut price although none exists. If a salesman were to approach the buyer with the sole intention of selling his company's materials and service, there would be far less talk and thought of cut prices and we would have a more stable market. Reasonable and proper merchandizing methods dictate that we should determine the cost of our product, to which we should add the proper overhead expense plus a reasonable profit. Were our business put on this basis and the salesman given to understand that the price he is authorized to sell at has been based on a careful analysis of costs and is the price which he is expected to get, would he not display more salesmanship and spend less time seeking cut prices?

Relations With Mills Improving

Discussing the improved relations with the mills which have been developed during the last six months, Mr. Routh cited the recently adopted policy of the producers of abandoning the custom of cutting bars to length in accordance with the consumers' requirements and shipping only in 40, 50 and 60-ft. lengths. "The cooperation which we have received from the mills during the last three months," he said, "is evidence that they recognize our problems. We should show our appreciation by discontinuing the handling of foreign steel. We owe this to the mills. I might mention in this connection that the amount of foreign reinforcing steel being imported into the United States is apparently decreasing, on account of the difficulty of handling this material. It is not only difficult to secure this material by the time expected, but the quality of the material is unsatisfactory because of the lack of uniform section."

The speaker stated that one large producer of reinforcing bars has made a financial subscription to the work of the institute. "This," he said, "we feel is an indication that the mills appreciate our efforts toward widening the market for reinforcing steel, and I feel sure that they will do everything they can to cooperate with us in the effort to have fireproof construction replace other types of construction."

Shipments Larger in 1928

Indications of a wider market for reinforcing bars were shown by the composite tonnage reports of the institute. During the first half of 1928 members increased their sales 11.6 per cent over the same period in 1927 and 7 per cent over 1926. Shipments in the first six months this year were 15.5 per cent higher than in the first six months of 1927 and 5.5 per cent higher than in 1926. "In spite of this increased tonnage," Mr. Routh stated, "the margin of profit in our industry has grown smaller, but hope of a better profit is promised through the improvement in the general steel market."

A paper dealing with the increase of this margin of profit by the control of selling costs, which was presented by Walter C. Conger, vice-president Truscon Steel Co., Youngstown, will be printed in abstracted

Steel Corporation Plants Observe Waste Prevention Week

POSTERS to be displayed in plants and departments of the Carnegie Steel Co. during the week of Oct. 15—to be observed as "Waste Prevention Week,"—were designed by William F. French, public relations department, Carnegie Steel Co., Pittsburgh. Although intended for use by the Carnegie company, several other subsidiaries of the United States Steel Corporation have indicated a desire for a supply of the posters. The setting aside of a week in which to bring vividly to the minds of the employees the desirability of the prevention of waste is one of the outgrowths of the plans developed by the Department of Commerce under the direction of Secretary Hoover for increasing productive efficiency, not only by simplification of styles and types of products, but by elimination of wastefulness.

form in a forthcoming issue of THE IRON AGE.

Additional Cost Charges To Be Compiled

At the recommendation of the committee on engineering, selling and cartage costs, it was decided that, beginning Jan. 1, 1929, the Institute will compile monthly reports from members on cartage costs for the entire country with New York and Chicago shown separately; on engineering costs, including estimating, engineering and overhead, and on selling costs inclusive of all related activities both overhead and administrative. In the past the institute has confined its cost studies and reports to warehouse work operations. The additional reports are to relate only to reinforcing bars and spirals and not to accessories. Each member will report under a confidential key designation and the composite reports, while concealing the members' identities, will show the high, low and average costs. It was thought that extremely low quotations would not be made by certain fabricators throughout the country if definite knowledge of costs was obtainable.

Standard for Form Dimensions

At a session devoted to concrete ribbed floor construction, form manufacturers and dealers present asked that a special committee be appointed to work out plans for the setting up of a special department relating to that phase of the industry. The meeting was then turned over to P. H. H. Dunn, division of simplified practice, Department of Commerce, who led the discussion leading to a new recommendation to standardize upon form dimensions. The referendum of the Department of Commerce, which was made following a similar session at the Biloxi, Miss., meeting last year was not approved to an extent which would permit of adoption and the new recommendation will be subject to a similar referendum. The recommendation provides the width of standard forms to be 20 in. or 30 in. with depth of 6, 8, 10, 12 or 14 in. Depth is interpreted to mean the vertical distance from the under side of the concrete slab above the center of the form to the bottom of the concrete joist. Special filler forms, to be used as specials for fillers only, are to be either 10 and 15 in. or 12 and 16 in. in width.

Standardization Progressing

In the report of the committee on grade of steel and standard sizes it was brought out that the campaign for the adoption of the intermediate grade as the single standard for new billet reinforcement was meeting with considerable success and resulting in a saving to members by reduced stock piles and better service. It was stated that nearly all the present mill production of reinforcing bars was in the eleven standard sizes adopted by the industry through the cooperation of the Department of Commerce and that there was also practically complete adherence to the four standard sizes of spirals.

New Members Added

The Peden Iron & Steel Co., Houston, Tex., and Woodward, Wight & Co., New Orleans, were elected to membership in the Institute.

Charles M. Gunn, president Gunn, Carle & Co., San Francisco, was elected a director to fill the unexpired term of Edward L. Soule, who has resigned.

Chicago Promises Iron and Steel Meeting

Three Technical Sessions and Well Planned Inspection Tours to Nearby Steel Plants

THE second national Iron and Steel Division meeting of the American Society of Mechanical Engineers will be held at the Palmer House, Chicago, Nov. 14 and 15. The Chicago section of the society will act as host. Besides a technical program, one of the biggest iron and steel centers of the country will offer numerous plants for inspection.

On the morning of Nov. 14 two papers are scheduled, one on heat economy in steel mills, and the other on sheet rolling. On Wednesday afternoon, Nov. 14, there will be two papers on cupolas and one on the manufacture of nickel steel plates.

For the dinner, planned for Wednesday evening, one speaker will discuss obsolescence and depreciation. The American Management Association is holding a meeting in Chicago at the same time and will join with the iron and steel engineers in the dinner meeting.

On Thursday morning there will be a session on bearings, metals and lubrication. Thursday afternoon is to be given over to plant inspection visits. Arrangements have been made to see five of the large iron and steel plants in the vicinity of Chicago, namely: National Tube Co., at Gary; Illinois Steel Co., at Gary; Illinois Steel Co., South Works; Acme Steel Co., and Inland Steel Co., at Indiana Harbor.

The papers are as follows:

Heat Economy Progress in Steel Mills, by F. H. Willcox and Gordon Fox, Freyn Engineering Co.

Modern Methods of Wide Beam Rolling. Sheet Rolling.

Powdered Coal Cupolas, by O. H. Meloche, American Radiator Co.

Hot Blast Cupolas, by F. K. Vial, vice-president and chief engineer, Griffin Wheel Co.

Manufacture of Nickel Steel Plate, by Charles McKnight, Development and Research Department, International Nickel Co., New York.

Lubrication of Steel Mill Equipment, by L. P. Tyler, Vacuum Oil Co., Pittsburgh.

Non-Ferrous Bearing Metals, by M. M. Carl, Buckeye Brass & Mfg. Co., Cleveland, Ohio.

Milwaukee Metal Trades' Apprenticeship Dinner

Apprenticeship activities for the new season in the National Metal Trades Association at Milwaukee got under way on Monday evening, Sept. 24, when 145 executives and officials of metal trade shops attended the annual apprenticeship dinner at the Republican Hotel.

The purpose of the meeting was to create increased interest in apprenticeship through a discussion of its problems. In his opening remarks, Harold S. Falk, chairman, said: "I consider meetings of this kind an extremely important part of our apprenticeship work even in those shops in which the institution is firmly established. Officials of various grades are only too apt to find their attention withdrawn from apprenticeship problems by the every day pressure of work. Meetings of this kind keep the subject in the minds of those of us who are responsible for the success of apprentice training in the shops of our members."

John Goetz, Kempsmith Mfg. Co., and F. J. Roensch, Louis Allis Co., reported the year's activity of the expansion committee, which is responsible for the development of apprenticeship in the district. According to the committee's report, five plants have put on apprentices for the first time during the last year.

By means of charts, W. J. Fairbairn, secretary Milwaukee branch National Metal Trades Association, pointed out that the number of apprentices in the district had increased from 450 to nearly a thousand during the last six years, that the great majority of apprentice graduates remain at work at the trade which they have learned and that apprenticeship seems to have a favorable effect on labor turnover, since those shops in the district in which apprenticeship is established have a much lower rate of turnover than those in which no apprentices are trained.

The following comprise the general apprenticeship committee of the National Metal Trades Association in Milwaukee: H. S. Falk, Falk Corporation, chairman; R. W. Buettner, Nordberg Mfg. Co.; W. M. Myers, Bucyrus-Erie Co.; Rene von Schleinitz, Harnischfeger Corporation, and William Watson, Allis-Chalmers Mfg. Co.

Vanadium Corporation of America, 120 Broadway, New York, has opened an office at 2245 Oliver Building, Pittsburgh, under direction of J. Alfred Miller, Jr., general manager of sales.

British May Increase Pig Iron Output

Stocks Low and Demand Exceeds Present Supply—French Domestic Requirements May Necessitate Greater Steel Production

(*By Cable*)

LONDON, ENGLAND, Oct. 8.

DEMAND for Cleveland pig iron is improving so that sales are now exceeding the output and stocks have diminished. Consequently there is consideration given to blowing in additional furnaces.

Hematite demand is also expanding and increased sales for export are placing makers in a better position. Foreign ore continues quiet and no revival in demand is expected this year.

Export demand for finished steel has improved, but actual sales are still difficult to negotiate. It is reported that an agreement has been reached among steel makers for raising foreign credits, but the plan applies only to certain branches of the Sheffield steel trade and not to the heavy steel industry.

Workman, Clark & Co. have received further orders for two 10,000-ton vessels for Andrew Weir and now have 100,000 tons of shipping contracts on hand. The Clyde output in September was 13 vessels of 69,000 tons. Thomas W. Ward has bought Spencer's Newburn Steel Works, which may be dismantled, as efforts to preserve them have failed.

Tin plate is active with good buying by both domestic and export users, for deliveries up to June. Some mills are rather short of specifications for the last quarter of this year, but most are well booked with tonnage for first quarter and even first half of next year.

Galvanized sheets are quiet. Black sheets continue inactive, but prices for the heavy gages have been advanced because of the higher cost of foreign semi-finished material.

Continental iron and steel trade with British users is increasing and several thousand tons of 3 to 4-in. billets have been sold at prices ranging up to £5 2s. ($24.79) per ton, f.o.b. Sheet bars have brought £5 3s. ($25.03) per ton, f.o.b.

Export demand for finished steel is quiet here, but is still reported good from abroad. French production in August was 857,000 tons of pig iron and 793,000 tons of steel ingots and castings. Polish production in 1927 was 617,000 tons of pig iron and 1,246,000 of steel ingots and castings.

French Prices Stabilizing

Mills Seek to Maintain Present Market—Greater Output Probable as Deliveries Are Extended

PARIS, FRANCE, Sept. 24.—Mills are engaged in an apparently successful effort to stabilize prices, being assisted by the recent decision of the International Steel Cartel to maintain the production quotas of all members unchanged in the last quarter. The factors that caused advances in prices, however, are still operating. Early this year the proportion of exports to production was about 50 per cent, and today it is very much smaller because of continued demand from domestic consumers. Since early in June export quotations have advanced by more than 10s. ($2.43) per ton on most products. Since Jan. 1 domestic prices have increased by 100 to 120 fr. ($3.90 to $4.68) per ton. The present level of the market is evidently satisfactory to producers, and no reduction of output is contemplated, as it might cause an unsatisfactory reaction. In fact, with deliveries ranging from four to six months on most products, it is believed that a further increase in output may be necessary. The French steel industry is beginning to approach an annual production of 10,000,000 tons, which will still be less than the full capacity possible, as the large plants in Lorraine are using only part of their capacity and some works in the North have not recovered since the war.

Pig Iron.—Production is increasing. The Societe des Acieries de France is blowing in a furnace on hematite at its Isbergues plant and contemplates putting two other furnaces in blast. At the meeting of pig iron producers in Paris, Sept. 20, prices were continued unchanged at 440 fr. ($17.16) per ton for phosphoric foundry and 565 fr. ($22.04) per ton, base Ardennes, for foundry hematite. Tonnages of iron placed at the disposal of domestic consumers for October were 36,000

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works with American equivalent figured at $4.86 per £ as follows:

Durham coke, del'd	£0	17½s.	to	£0	17¾s.	$4.25	to	$4.31
Bilbao Rubio ore*	1	2	to	1	2½	5.35	to	5.48
Cleveland No. 1 fdy	3	8½	to	3	9½	16.64	to	16.89
Cleveland No. 3 fdy	3	6				16.04		
Cleveland No. 4 fdy	3	5				15.80		
Cleveland No. 4 forge	3	4½				15.68		
Cleveland basic (nom.)	3	5				15.80		
East Coast mixed	3	10				17.11		
East Coast hematite	3	10½				17.23		
Rails, 60 lb. and up	7	15	to	8	5	37.66	to	40.10
Billets	6	2½	to	6	15	29.77	to	32.81
Ferromanganese	13	15				66.83		
Ferromanganese (export)	14	0				68.04		
Sheet and tin plate bars, Welsh	6	0				29.16		
Tin plate, base box	0	18	to	0	18¼	4.37	to	4.43
Black sheets, Japanese specifications	13	7½				65.00		
						C. per Lb.		
Ship plates	7	12½	to	8	2½	1.63	to	1.74
Boiler plates	9	0	to	10	10	1.92	to	2.25
Tees	8	2½	to	8	12½	1.74	to	1.84
Channels	7	7½	to	7	17½	1.58	to	1.69
Beams	7	2½	to	7	12½	1.53	to	1.63
Round bars, ¾ to 3 in.	7	5	to	7	15	1.55	to	1.66
Steel hoops	9	0	to	10	0	1.92	to	2.14
Black sheets, 24 gage	10	0				2.14		
Galv. sheets, 24 gage	13	10	to	13	15	2.93	to	2.98
Cold rolled steel strip, 20 gage, nom.	16	0				3.42		

*Ex-ship, Tees, nominal.

Continental Prices All F.O.B. Channel Ports

(Per Metric Ton)

Foundry pig iron (a):						
Belgium	£3	3s.	to £3	5s.	$15.31	to $15.80
France	3	3	to 3	5	15.31	to 15.80
Luxemburg	3	3	to 3	5	15.31	to 15.80
Basic pig iron (nom.):						
Belgium	3	3			15.31	
France	3	3			15.31	
Luxemburg	3	3			15.31	
Coke	0	18			4.37	
Billets:						
Belgium	5	2			24.79	
France	5	2			24.79	
Merchant bars:					C. per Lb.	
Belgium	6	7½			1.40	
France	6	7½			1.40	
Luxemburg	6	7½			1.40	
Joists (beams):						
Belgium	5	5			1.14	
France	5	5			1.14	
Luxemburg	5	5			1.14	
Angles:						
Belgium	6	0			1.30	
⅛-in. plate:						
Belgium (a)	6	15			1.50	
Germany (a)	6	15			1.50	
⅞-in. ship plate:						
Belgium	6	10			1.44	
Luxemburg	6	10			1.44	
Sheets, heavy:						
Belgium	6	1			1.33	
Germany	6	1			1.33	

(a) Nominal.

tons of phosphoric foundry and 35,000 tons of hematite. In October, 1927, the quantities available were 30,000 tons of foundry and 25,000 tons of hematite. The entente of French, Belgian and Luxemburg furnaces has continued its export prices for October.

Semi-Finished Material.—At the September meeting of the Comptoir Siderurgique it was decided to continue the domestic prices on all products, although a rising tendency is evident. Billets remain at 565 fr. ($22.04) per ton, blooms at 535 fr. ($20.87), and sheet bars at 600 fr. ($23.40) per ton.

Finished Material.—Merchant bars are steady at 710 to 720 fr. per ton (1.25c. to 1.27c. per lb.) in the East and at 740 fr. per ton (1.30c. per lb.) in the North of France. The Comptoir Siderurgique at its September meeting decided upon an increase of 25 fr. (98c.) per ton in the price of beams. Angles are scarce, and demand for small sizes of round bars is heavy. The sheet market is active and prices are strong. The situation in the wire-drawing trade is unsatisfactory, as the price of wire rods is proportionately much greater than the prices obtained on wire products. This is the result of an entente of producers in the wire rod field and lack of organization among wire drawers. Recent negotiations of wire-drawing plants failed because of the opposition of one important company. Other makers, however, have agreed that action must be taken to form a purchasing comptoir, which would buy foreign rods if the domestic price continued too high.

French Automobile Merger Considered

PARIS, FRANCE, Sept. 24.—Manufacturers of automobiles are reported to be considering the formation of a large corporation, similar to the General Motors Corporation in the United States. No definite action is as yet reported, but the suggestion seems to have been favorably received by many companies.

Trend of European Wages Is Upward

HAMBURG, GERMANY, Sept. 22.—Wages in the European steel industry are constantly increasing. The average earnings of steel workers in Germany in 1925 were 0.68 m. (16c.) per hr., but in July of this year they had advanced to 1.08 m. (26c.) per hr. This average includes unskilled as well as skilled labor. On Sept. 20 an increase of 5 per cent was granted in the Saar steel industry, and on Sept. 1 the Czechoslovakian steel mills advanced wages 7.5 per cent. An increase of 2½ per cent in steel workers' wages took place in Belgium on Sept. 10. Luxemburg steel workers received a 3 per cent advance in wages in July.

At present, Luxemburg steel mill employees are demanding a further increase of 5 per cent in their wages; Austrian workers, a 12 per cent increase; and German steel mill labor, 5 per cent. French workmen are expected to ask shortly for a 7 to 10 per cent increase.

South African Government Buys Steel in Germany

HAMBURG, GERMANY, Sept. 22.—Considerable interest has been aroused in the steel industry here by the announcement that the Government of the Union of South Africa has placed an order with the Deutsche Edelstahlwerke at Bochum for about 1000 tons of spring steel, tool and high-speed steel to the value of about $260,000. This is said to be the first time the Government of a British dominion has placed an important order in Germany.

German Tube Association Buys Competitor

HAMBURG, GERMANY, Sept. 22.—The German Tube Makers' Association has bought the only non-member in Western Germany, the Rohrenwerk Luxemburger of Düsseldorf, and has closed the plant. This is expected to improve the position of the association in export trade, as the Rohrenwerk Luxemburger was a keen competitor, especially in the Near East. Sales of gas pipe for export have been satisfactory, but the seamless tube market is quiet.

Large Increase in Sheet-Metal Ware Shipments

Shipments of enameled sheet-metal ware in August are reported by the Department of Commerce at 358,811 dozens, valued at $1,354,316, compared with 277,684 dozens in July, valued at $1,059,547. August shipments were somewhat higher than those of a year earlier—329,843 dozens valued at $1,278,013.

For the first eight months the shipments have been 2,770,676 dozens, valued at $10,405,473, compared with 2,689,631 dozens last year, valued at $9,505,737. The increase has been wholly in colored goods, the value of which has gone up more than 325 per cent; both white ware and gray ware have declined.

August shipments of galvanized sheet-metal ware are reported at 186,864 dozens, valued at $746,580; this compares with 169,271 dozens in July, valued at $677,451, and with 196,439 dozens in August, 1927, valued at $715,343.

Shipments for the first eight months reached 1,584,508 dozens, valued at $6,085,745, compared with 1,508,352 dozens last year, valued at $5,678,957.

French Engineers to Visit American Plants

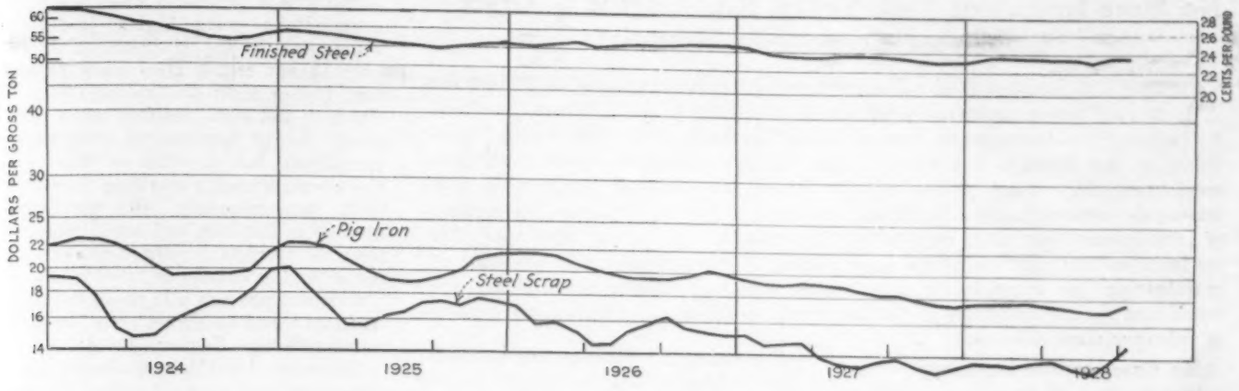
A delegation of French engineers, invited unofficially in the interest of international relationships and to further American exports, is scheduled to arrive in New York, Oct. 22, by the French Line steamer De Grasse. The party will also include Belgian and possibly Czechoslovakian engineers. While they will probably include Niagara Falls and Washington in their tour, their chief interest lies in visits to 23 plants in 13 cities. They are expected to leave New York on Nov. 14 by the Rochambeau.

The party will be in direct charge of Thomas Cook & Son, travel agents, and generally speaking is not expecting civic or association receptions on any formal scale. The committee on arrangements, of which Dr. Robert Grimshaw, 65 Jesup Place, New York, is chairman, reports that there will be a few special luncheons, including one to be given by the Cutler-Hammer Mfg. Co. and one by the Nordberg Mfg. Co., at Milwaukee. The invitations appear to have been extended only to members of the French Society of Civil Engineers and the equivalent Belgian and Czechoslovakian engineering societies.

Open Pittsburgh Office of Commerce Department

The new Pittsburgh office of the United States Department of Commerce, which, as announced in THE IRON AGE, was established Sept. 8, was formally opened Oct. 5 with an inaugural luncheon at the Chamber of Commerce, in the building of which is located the new government office. The honor guests at the luncheon were Senator David A. Reed and Congressman Stephen G. Porter, who assisted the Chamber of Commerce in securing for Pittsburgh this branch office of the Department of Commerce. Addresses were made by them and also by John Matthews, Jr., assistant director of the Bureau of Foreign and Domestic Commerce, who represented the head of that bureau, Dr. Julius Klein, who was prevented from attending by illness. Mr. Matthews explained how Pittsburgh district business men might take advantage of the direct facilities of the new office in finding purchasers for their products in both the domestic and foreign markets. Luther Becker, head of the iron and steel division of the bureau, and Walter S. Rastall, head of the industrial machinery division, were among the speakers. T. P. Gaylord, president of the Chamber of Commerce, introduced William L. Munro, president American Window Glass Machine Co., as toastmaster. Wilson K. Ray is in charge of the new branch.

Scrap Has Risen Sharply in Recent Weeks, Reaching the Highest Level in Two Years. Pig iron has recovered from the lowest point it has touched in almost 13 years and finished steel is still below the prevailing level of the past five years



Scrap Prices Recover in Third Quarter of Year

September Shows Highest Average in Nearly Two Years—Each 1928 Quarter Above the Previous One

AVERAGE prices of heavy melting steel scrap at Chicago, Philadelphia and Pittsburgh have recovered sharply from the weakness of the early summer and now stand at the highest point since October, 1926. The average on May 15 was $14 a gross ton, which gave way to $13.08 in early July. From that low point a steady advance brought the average to $15.42 last week.

In spite of the low level in July, the average for the third quarter, at $13.88, was the best for the year. It compares with $13.74 in the second quarter and $13.69 in the first. In the third quarter of 1927 the composite was $13.73 a ton.

Meantime, pig iron has recovered from the lowest level it had reached in more than 12 years. But the differential between THE IRON AGE pig iron composite at the end of September and the scrap average was less than $3 a ton. This compares with more than $6 a ton about two years ago.

Finished steel has had only slight fluctuations since early 1927. It declined during the second quarter to 2.341c. a lb. and still further in July, but now has come back to 2.362c. a lb. in the first week of October.

Comparative figures for 33 months, covering steel scrap, pig iron and finished steel, are given in the table. The diagram carries the story of these changing prices over a period of nearly five years.

COMPOSITE PRICES ON IRON AND STEEL PRODUCTS

	(Per Gross Ton) Steel Scrap	Pig Iron	Finished Steel, Per Lb.
1925 *average*...	*$17.12*	*$20.58*	*2.465c.*
January, 1926....	16.97	21.79	2.447c.
February	15.50	21.77	2.428c.
March	15.83	21.65	2.433c.
April	15.27	20.96	2.439c.
May	14.35	20.69	2.416c.
June	14.40	20.00	2.420c.
July	15.42	19.51	2.431c.
August	15.88	19.46	2.431c.
September	16.25	19.46	2.439c.
October	15.58	19.69	2.449c.
November	15.25	20.13	2.453c.
December	15.08	19.94	2.453c.
Year's average.	*15.48*	*20.42*	*2.439c.*
January, 1927....	15.17	19.44	2.432c.
February	14.58	19.07	2.378c.
March	14.65	19.03	2.367c.
April	14.71	19.21	2.360c.
May	13.95	19.09	2.360c.
June	13.60	18.92	2.369c.
July	13.48	18.56	2.367c.
August	13.80	18.17	2.367c.
September	13.92	18.03	2.357c.
October	13.48	17.96	2.319c.
November	13.18	17.59	2.299c.
December	13.48	17.55	2.310c.
Year's average.	*14.00*	*18.55*	*2.357c.*
January, 1928....	13.70	17.63	2.318c.
February	13.71	17.73	2.361c.
March	13.65	17.73	2.362c.
April	13.81	17.67	2.359c.
May	13.90	17.45	2.350c.
June	13.52	17.23	2.341c.
July	13.13	17.10	2.325c.
August	13.75	17.11	2.348c.
September	14.75	17.54	2.348c.
Average 9 mo..	*13.77*	*17.46*	*2.346c.*

Indiana Opposes Abolition of Rate Groups

Exceptions to the proposed report of the Interstate Commerce Commission recommending a mileage basis for freight rates on iron and steel products in Official Classification territory will be filed with the commission by the Indiana State Chamber of Commerce as a result of a meeting of the chamber's special iron and steel committee held recently at Indianapolis. The committee declared that the adoption of the proposed mileage basis would abolish the present group system in the State and result in increases to shippers of about 18 per cent.

Members of the committee are H. S. McNeeley, traffic commissioner Indianapolis Chamber of Commerce; H. A. Holopeter, traffic manager Terre Haute Chamber of Commerce; L. R. Martin, traffic manager Oliver Chilled Plow Works, South Bend; John C. Fox, traffic manager Highland Iron & Steel Co., Terre Haute; S. S. Shambaugh, traffic manager Continental Steel Corporation, Kokomo; George M. Field, traffic manager Chrysler Corporation, Newcastle, and T. L. Dairy, traffic manager Indiana Steel & Wire Co., Muncie.

Record Quarter in Automobiles

With a production of 460,000 cars and trucks in September indicated by preliminary estimates, the total for the third quarter of the year is brought to about 1,365,500, the largest quarter the automotive industry has ever had, says *Automotive Industries.* Total production in the first nine months is brought to approximately 3,687,000 as against 3,712,984 in the same period of 1926, the record production year. There is little question that output this month will exceed the 349,091 total in October, 1926, and that production in the rest of the year will carry 1928 to a new high record.

Overhead Conveyors in Wire Mill

An overhead system of conveyors will be installed in its wire mill by the Sheffield Steel Co., Kansas City. The equipment will include 10,200 ft. of tramrail, 14 tramrail cranes ranging from 500 lb. to 4000 lb. capacity, 5 cab controlled electric tramrail carriers, 200 hand power carriers, a gantry crane in the cleaning house over a straight row of tubs and a tramrail system in each baker in which the rods will be carried on hairpin hooks. The conveyor equipment will be supplied by the tramrail division of the Cleveland Crane & Engineering Co.

Must Protect Buying Power of Wages

No More Important Task Today, Says Eugene G. Grace—Employees' Cooperation Essential

AMERICAN industry faces no more important task today than to protect the buying power represented by wages, according to E. G. Grace, president Bethlehem Steel Corporation, in a letter on "Prosperity and High Wages," published in the *Bethlehem Review*, a news bulletin that goes to all Bethlehem employees. Mr. Grace points out that every year through conferences with employees' representatives Bethlehem makes a report to employees on matters of joint interest just as it reports to the stockholders at annual meetings. The conferences this year discussed as a matter of vital concern the necessity of maintaining the wage levels upon which American standards of living are based and the current issue of the *Review* is therefore devoted to some aspects of this important problem.

Mr. Grace says in his letter:

"In the last 10 years a new order has been created in our economic life. It is recognized, first, that high standards of living are based on the greater earning power of labor and, second, that continued prosperity and high wages go hand in hand.

"Progressive industrial management seeks, therefore, to enable employees to earn wages as high as can be paid. Even when profits decline or business falls off efforts are made to economize in other ways than by cutting wages. But management alone is powerless to maintain high wages. They can be paid only so long as economic conditions will permit them to be paid.

"One of the chief factors affecting this ability to pay them is foreign competition. With European wages far below American wages and consequently costs of production lower abroad, European manufacturers can compete on equal terms with the products of higher paid American labor.

"This fact vitally concerns every American worker. Naturally we are all interested in European progress, but economic improvement abroad can be accomplished without sacrificing American wages and living conditions. Foreign standards can be raised without reducing ours.

"Responsibility in part for protecting his wages rests upon the individual both as an employee and as a citizen.

"As a wage earner his responsibility is to help increase production and reduce costs so that his own company can meet competition, sell its products at a profit and thus continue to pay the highest possible wage. Paying men on the basis of individual merit is one way to increase wages and reduce costs.

"As a citizen the employee's responsibility is to take an active, intelligent interest in company and public affairs. We have reached a point in this country today where thousands of employees are also stockholders, with both a payroll and company interest in continued prosperity.

"Certain it is, therefore, that as wage earners, stockholders and citizens our outstanding interest is an economic one. If we are mindful of that fact and act accordingly we shall cooperate with each other to promote our company's prosperity and see to it that nothing is done to disturb American living standards which have taken us so many years of hard work to establish."

The *Review* points out that steel industry wages generally are higher than wages paid in most of the manufacturing lines. Based on data compiled by the National Industrial Conference Board, it is stated that wages in terms of average weekly earnings in the iron and steel industry for June —and this is typical of other monthly comparisons—were higher than the wages paid in any of 20 major industries except two. They were 24 per cent higher than the average of all. The iron and steel industry has a relatively larger number of continuous operations, but in spite of this fact the average weekly working time was only approximately 10 per cent greater in the iron and steel industry than the average weekly working time for all of the industries reported.

Comparisons are also made between American and foreign wages. In this connection the *Review* states:

"Because American workmen produce more and are paid higher wages, the standards of living in the United States are higher than those of any other country. Mass production and labor-saving devices are far ahead of foreign competitors. This means simply that the American employee creates more value by his work than European workers."

Cooperation in Making Electric Steel Castings

"Competitors Who Have Cooperated to Improve Quality" is the title of a 31-page pamphlet just published by the Electric Steel Founders' Research Group, Chicago, of which R. A. Bull is director. It takes the place of the regular October issue of *Research Group News*, and is to be distributed at the National Metal Exposition in Philadelphia, Oct. 8 to 12, where the group is to display products of its five electric steel casting plants. The pamphlet contains a short history and photographs of the various plants making up the organization and reference matter concerning the products. Specifications, heat-treatment practice and similar data, customarily found in handbooks, are also included.

September Ore Shipments Gain, Year's Total Lower

Iron ore shipments from the Lake Superior region during September amounted to 8,748,286 gross tons, an increase of 1,518,245 tons, or 21 per cent, compared with the 7,230,041 shipped from upper Lake ports in September, 1927. The total for the season to Oct. 1, 41,265,979 tons, declined 1,117,978 tons, or 2.64 per cent, compared with the 42,383,957 tons shipped to Oct. 1, 1927. The table gives the shipments for September and for the season in 1928 and 1927 in gross tons.

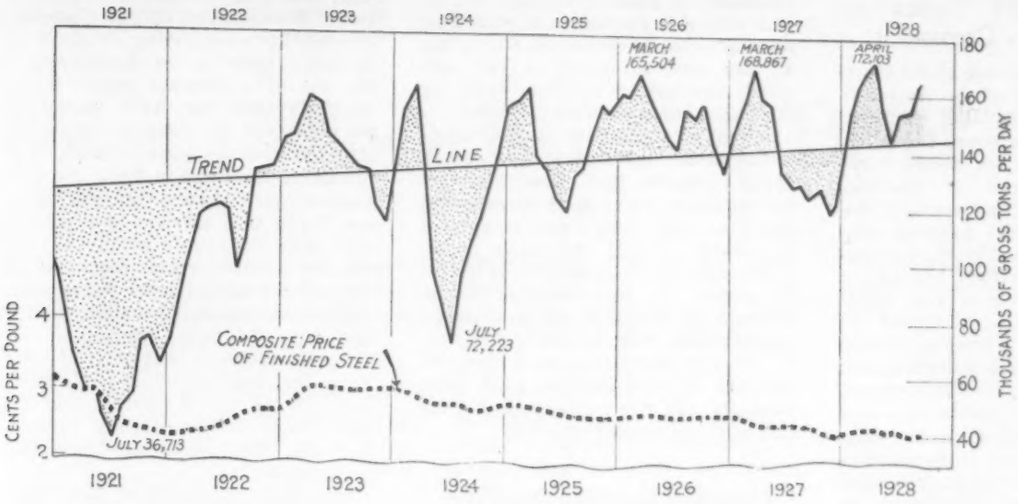
Establishes Manly Medal

To commemorate the work of Charles M. Manly in the fields of automotive and aeronautic engineering and to serve as an inspiration to others, the Society of Automotive Engineers is establishing a Manly memorial medal to be awarded annually for the best paper on aeronautical power plant, part or accessory design, construction or research presented at a meeting of the society or one of its sections during the year.

An outstanding accomplishment of Mr. Manly, who died last October, was the designing and building, 30 years ago, of a gasoline engine for the flying machine built experimentally by Prof. S. P. Langley, secretary of the Smithsonian Institution. This was a five-cylinder radial engine that weighed only 2.4 lb. per hp. developed, although no builder had previously been able to construct an engine weighing less than 12 lb. per hp. and no builder subsequently equalled Mr. Manly's accomplishment until the 400 hp. Liberty-12 engine was built.

MOVEMENT OF LAKE SUPERIOR ORE

Port	September, 1928	September, 1927	To Oct. 1, 1928	To Oct. 1, 1927
Escanaba	774,449	818,993	4,077,064	4,591,438
Marquette	590,001	540,707	2,568,355	2,499,362
Ashland	953,912	878,040	4,958,227	5,237,262
Superior	2,547,529	2,070,811	11,779,177	11,972,174
Duluth	2,941,011	2,072,737	13,469,637	13,294,023
Two Harbors	941,384	848,753	4,413,519	4,789,698
Total	8,748,286	7,230,041	41,265,979	42,383,957
Increase	1,518,245	.....	.....	.....
Decrease	.....	.....	1,117,978	.....



Exceptionally High Ingot Production Was Recorded in September. On the basis of daily averages, only three previous months have bettered it—March, 1927, and March and April, 1928. Prices were fractionally better than at midyear

Largest September Steel Ingot Production

Output Larger Than in Any Month of Any Second Half, Except August, 1928—Nine-Month Figure a Record

PRODUCTION in September of open-hearth and Bessemer steel ingots in the United States as reported to the American Iron and Steel Institute, was less than 1 per cent under the total for August, in spite of having only 25 nominal working days, against 27. Last year the shrinkage from August was 6½ per cent on a reduction of one day. Not only was the September tonnage the largest ever produced in any September, but it was, with the exception of the preceding month, by far the largest for any month in any second half-year. It is calculated at 4,147,583 gross tons.

On the basis of 25 working days, the output was 165,903 tons a day. This is the highest figure since the record-breaking total of last April. It is 32 per cent above the 125,726 tons of September, 1927, and is the highest daily rate ever reached in a second-half month. Output in August was given as 154,759 tons a day.

For the nine months of the year to date, the calculated production has been 36,930,520 tons. This exceeds by about 1,240,000 tons the previous high record for the first nine months, which was that of 1926, when 35,689,151 tons was produced. That tonnage included also crucible and electric ingots, which are not covered in the current figures. If we estimate 300,000 tons for that group in the first nine months of 1928, the total production would approach 37,250,000 tons, or more than 1,500,000 tons ahead of the previous record. Compared with last year, when the output in nine months was 33,778,952 tons, this year's production has shown a gain of more than 9.3 per cent.

Open-hearth steel made in 25 days in September was almost equal to that made in 27 days of August. Practically all of the shrinkage of 31,000 tons between the two months was in the Bessemer grade, which dropped 24,421 tons, or 4.3 per cent. Bessemer steel in September formed 13.9 per cent of the total steel reported. In the nine months, Bessemer steel made a gain of 3.9 per cent over 1927, compared with 10.3 per cent for open-hearth steel.

Total ingot production, including crucible and electric steel ingots, was probably 1000 tons greater daily than the figure given. This would make the daily average for the month about 167,000 tons. Details of the first nine months of 1927 and of 1928 are covered in the table.

To Detect Rail Fissures

Invisible transverse fissures, starting from within the structure of steel rails and working outward, giving no warning until the rail breaks in service, are to be sought by a new electrical device invented by Elmer A. Sperry and announced by the American Railway Association. A small covered car containing the instruments is drawn along the track at 7 or 8 miles an hour. Electric connections provide a magnetic field within which is the rail. The faint impulse is magnified several thousand times when a fissure is met, resulting in sending a squirt of white paint against the rail. The paint marks are danger signals, calling for replacement of the rails so designated.

NINE MONTHS' PRODUCTION OF STEEL INGOTS (GROSS TONS)

	1927					1928				
	Reported by Companies Which Made 94.68 Per Cent of the Steel Ingots in 1927		Calculated Monthly Output All Companies	No. of Working Days	Approximate Daily Output All Companies	Reported by Companies Which Made 94.68 Per Cent of the Steel Ingots in 1927		Calculated Monthly Output All Companies	No. of Working Days	Approximate Daily Output All Companies
Months	Open-Hearth	Bessemer				Open-Hearth	Bessemer			
January	3,042,133	545,596	3,789,874	26	145,764	3,280,247	498,746	3,991,332	26	153,513
February	3,043,492	565,226	3,812,046	24	158,835	3,308,728	521,366	4,045,304	25	161,812
March	3,702,660	590,709	4,535,272	27	167,973	3,700,411	567,309	4,507,520	27	166,945
April	3,341,750	565,440	4,127,335	26	158,744	3,509,637	564,039	4,302,573	25	172,103
May	3,273,593	557,785	4,047,251	26	155,663	3,397,631	581,949	4,203,190	27	155,674
June	2,823,107	486,053	3,495,609	26	134,446	3,016,487	527,351	3,742,964	26	143,960
July	2,596,349	436,883	3,204,135	25	128,165	3,075,247	533,550	3,811,573	25	152,463
August	2,806,347	505,596	3,498,549	27	129,576	3,386,750	569,436	4,178,481	27	154,759
September	2,622,977	471,548	3,268,881	26	125,726	3,381,917	545,015	4,147,583	25	165,903
9 Months	27,252,408	4,724,836	33,778,952	233	144,974	30,057,055	4,908,761	36,930,520	233	158,500

Doctor Hatfield Talks on Resistance to Corrosion

At the October meeting of the Hartford, Conn., chapter of the American Society for Steel Treating, held Oct. 2, a large attendance heard Dr. W. H. Hatfield, director of the Brown Firth Research Laboratories at Sheffield, England, and also the Campbell Memorial lecturer at the national convention. He addressed his first American audience at Hartford, his subject being: "Acid, Corrosion and Heat-Resistant Steels." He developed his subject by showing numerous slides, which exhibited a vast amount of experimental work on the effects of corrosion upon different steels.

He held that a thin oxide film only a few molecules thick is responsible for resistance to corrosion. He cited Ulick Evans's clever experiment in separating the iron from the oxide film, leaving the film floating about in solution like the finest gossamer. In another experiment Doctor Hatfield showed that a common mild steel plate, when polished and exposed to the weather but protected by a gauze in front of the polished face, remains bright and uncorroded for many months. He explained this by reasoning that the oxide film on ordinary steel is very liable to mechanical injury. Protection from all particles of dust and dirt insures that no injury to the film takes place and, therefore, no nucleus for corrosion is available. The oxide film on high-chromium and high-chromium-nickel steels is very tenacious and mechanically strong.

Doctor Hatfield showed in a tabular way the results of corrosion tests performed under standard conditions on a series of steels with varying chromium content, on another series of chromium-nickel steels with the nickel content constant, and another series with the nickel varying and chromium constant. A great advantage in general corrosion properties is gained by adding nickel to chromium steels, the 18 per cent chromium, 8 per cent nickel proving an excellent type for general corrosion-resisting properties.

For any specific case in acid-resistant applications a certain steel can be found to "do the job." Stainless steel for resisting corrosion of superheated steam at 1000 deg. Fahr. is applied in turbine blading and valve parts. A chrome-nickel-silicon steel is useful in applications where a high tensile strength is necessary at an elevated temperature, such as 700 to 800 deg. C. At this temperature, it has the strength of mild steel at room temperature, and the non-scaling properties of this steel are excellent.

Carriers Submit Plan for Interterritorial Rates

A memorandum regarding joint through class rates between Western Trunk Line and Official Classification territories has been submitted to the Interstate Commerce Commission on behalf of carriers operating in those territories, in response to a communication from Commissioner McManamy, requesting the carriers to "advise the commission as to the most practical plan for overhead rates not based on gateway combinations, if finally determined upon, and as to the classification which should govern them. It will be understood," the letter further stated, "that evidence of that nature introduced by the carriers is without prejudice to their position that combinations afford the proper basis."

This memorandum is in no sense a brief and it is confined to an outline of a suggested plan with necessary explanation, but without any argument for or against the plan. It contemplates joint through class rates between Western and Official Classification territories including points on the Missouri River to be determined by the use of a distance scale. It also suggests that the rates should not be published as distance rates, but that the distance scale be used in determining the rates in much the same manner as proposed by the Western Trunk Line carriers in connection with their basic scale within that territory. It is further recommended that rates resulting from the message outlined in this memorandum shall be the same in both directions. The plan also contends that without relief from the long-and-short-haul provisions of the fourth section any distance basis is immediately defeated and rates result which are lower than those prescribed.

The plan contemplates the application of the Western classification in connection with its adjusted rates, which is in harmony with the suggestions made with respect to interterritorial rates between Western Trunk Line and Southern territories. If this plan should be adopted all rates within this territory and to and from Western Trunk Line territory would be governed by the Western classification.

Eastern Pipe Makers Protest Proposed Rate Changes

WASHINGTON, Oct. 9.—Exceptions to the proposed report of Examiners Howard C. Faul and C. M. Bardwell, in connection with the rate structure on iron and steel products throughout Official Classification territory, were filed last week with the Interstate Commerce Commission by the Eastern Cast Iron Pipe Producers, New York, who asked the commission to dispose of pending cast iron pipe rate cases. It was contended that foundries within the Philadelphia group are being discriminated against and are in need of immediate relief. The protest against the Faul-Bardwell report was based on the fact that it did not treat the cast iron pipe rate situation, and declared that to do so would disrupt "what seems to be a satisfactory competitive adjustment." The protesting interests said that the pipe plant at Scottsdale, Pa., had the benefit of specific commodity rates to 88 points of consumption, that the Birmingham, Ala., district had specific commodity rates to 80 per cent of these destinations and that Philadelphia had such rates to only 15 per cent of the destinations.

The six hot mills of the new tin plate plant of the Columbia Steel Corporation, San Francisco, at Pittsburg, will be furnished by the United Engineering & Foundry Co., Pittsburg, Calif.; the six cold mills by the Hyde Park Foundry & Machine Co., Hyde Park, Pa.; the hot mill drives by the Mesta Machine Co., Pittsburgh, and the cold mill drives by the Gears & Forgings, Inc., Pittsburgh.

Coming Meetings

October

American Gear Manufacturers Association. Oct. 11 to 13. Semi-annual meeting, Statler Hotel, Buffalo. T. W. Owen, 3608 Euclid Avenue, Cleveland, secretary.

Society of Industrial Engineers. Oct. 17 to 19. Fifteenth national convention, Hotel Seneca, Rochester, N. Y. George C. Dent, 205 West Wacker Drive, Chicago, secretary.

American Refractories Institute. Oct. 24. Fall meeting, Vanderbilt Hotel, New York. Dorothy A. Texter, 2202 Oliver Building, Pittsburgh, secretary.

American Iron and Steel Institute. Oct. 26. Fall meeting, Commodore Hotel, New York. E. A. S. Clarke, 75 West Street, New York, secretary.

November

Engineers Society of Western Pennsylvania. Nov. 2. All day discussion of welding, William Penn Hotel, Pittsburgh.

American Management Association. Nov. 13 to 15. Fall meeting, Palmer House, Chicago. W. J. Donald, 20 Vesey Street, New York, managing director.

American Institute of Steel Construction. Nov. 13 to 17. Sixth annual meeting, Biloxi, Miss. Charles F. Abbott, 285 Madison Avenue, New York, executive secretary.

American Society of Mechanical Engineers. Nov. 14 and 15. Iron and steel division, Chicago. Thomas Wilson, 7 South Dearborn Street, Chicago, chairman local section.

Second International Conference on Bituminous Coal. Nov. 19 to 24. Carnegie Institute of Technology, Pittsburgh.

Society of Automotive Engineers. Nov. 22 and 23. Production meeting, Book Cadillac Hotel, Detroit. C. F. Clarkson, 29 West Thirty-ninth Street, New York, general manager.

This Issue in Brief

Cost records show that maintenance of machines in apprentice department of electrical equipment plant is slightly lower than for same machines in production line. This is probably due to close supervision of students and more deliberate pace of operations.—Page 880.

* * *

Combination of high temperature with reducing atmosphere in atomic hydrogen welding gives unusually strong ductile welds at a rapid rate. The welds are free from oxides and blow holes, and have smooth finished appearance.—Page 883.

* * *

Building contracts in September set high record for that month. Dodge reports for 37 States east of Rocky Mountains show 14 per cent gain over August and 13 per cent increase over September, 1927. Decline of 15 per cent in value of projects contemplated indicates lower construction during remainder of year.—Page 942.

* * *

Margin of profit said to be growing smaller in reinforcing steel industry in spite of increased sales and better relations with mills. Institute president blames diminishing returns on price cutting within industry and lack of sincerity among competitors.—Page 901.

* * *

Success of airplane industry demands use of efficient machinery for large scale production, says aeronautical engineer. There must also be standardization of product, method and materials, and manufacturers must cease to experiment with too many different types of planes and motors.—Page 893.

* * *

Training of apprentices costs General Electric Co. about $4,000 per man. Permanency of employee, however, cuts cost to about $2,800 and debit is immediately wiped out if man enters supervisory position.—Page 881.

Purchasing agent should know what constitutes practical mill practice and should insist that designing and production department adopt reasonable standards and specifications, says flat-rolled steel association head. Large savings could be realized if consumers' designing and inspection department heads could meet with steel makers and adopt practical standards and specifications covering flat-rolled steel.—Page 892.

* * *

Mechanical devices lessen possibility of accidents in foundry. Safety engineer holds that mechanical handling of raw stock, the pouring of molten metal by mechanical means and the installation of modern type of conveyor systems would reduce accidents in foundry to minimum.—Page 897.

* * *

Narrow profit margins per sales dollar have come to stay in industry, analysis shows. Sales at prices closely approximating cost of production are dominant factor in determining commodity prices, forcing producers to seek profit by volume rather than by individual sales.—Page 882.

* * *

September steel ingot production was largest ever recorded for that month. Output of 165,903 tons daily was highest since April and exceeded any previous month in second half of year. Nine months' production was greater than any corresponding period in past by 1,240,000 tons.—Page 907.

* * *

Iron and steel make up 54.2 per cent of materials used in well known airplane engine. Aluminum and its alloys are used as far as possible but are not advantageous for highly stressed parts. Aluminum is not as strong as alloy steel and sections cannot always be increased to offset reduced strength. Steel is always used when extreme hardness is needed.—Page 898.

Extension of conveying equipment in Cadillac plant provides for many economies. Assembly conveyors for axles act as automatic pace setters and split up operations to permit carrying out progressive assembly to fuller extent than was possible under old methods. Discarding of old type floor stands and dolly trucks on casters permits solid support for work during assembling operations.—Page 889.

* * *

All steel received at forge plant is given pile number, and samples from each heat are analyzed and recorded. This system follows work through process and affords identification for steel until finished forging is shipped. Record is kept on file providing check long after forging has gone into service.—Page 888.

* * *

Executive who assumes it is right to bring all pressure to bear upon his purchasing department to secure the lowest possible price in mass buying is doing business as it was done 3000 years ago, says association head. Insistence on unreasonably low prices is "profiteering," and industry which does this must suffer in the end.—Page 892.

* * *

Forging furnaces in Cleveland plant are connected with recording pyrometers and have individual automatic control equipment working through Geisinger valves. Control of heating furnaces is being conducted in experimental way in connection with special forging work and control equipment is being used with view to holding heat control of furnace to closer limits.—Page 886.

* * *

Camshafts in automotive plant are handled from operation to operation on overhead endless chain conveyor 600 ft. long. Saving in space has made room for additional line of machine tools, and number of units on floor or on truck going through department has been greatly reduced.—Page 891.

A. I. FINDLEY
Editor

THE IRON AGE

W. W. MACON
Managing Editor

ESTABLISHED 1855

Voluntary Price Maintenance

IN what may be called the voluntary maintenance of prices there has been much favorable experience in the last few years among various classes of manufacturers. We say the experience has been favorable, for it is obvious that indiscriminate price competition would have sent prices of many commodities well below the full cost of production if not below the bare factory cost. Those who speak out concerning inadequate profits are not to be upbraided for complaining, but it would be well if they considered now and then how much worse things might be. There are few manufacturing lines in which demand does not fall quite short of productive capacity.

While there is reason for urging that the anti-trust laws should be amended, that should be done with eyes wide open to the fact that no panacea could be offered by any amendment likely to be adopted. There is the experience of the past as a guide. When the Sherman law was lightly regarded and when there was no Sherman law there were price agreements and in the majority of cases they did not hold for any length of time, if at all. Even when there were forfeits, or contributions to a general fund for periodic distribution, there were evasions. When an arrangement broke up, it was the usual experience that the latter state of the industry was worse than the first.

It is the will to play fair that counts, and when there appeared to be a tight agreement there was the more temptation to attempt evasion. Not so when there is an open market. A price cut nowadays is known almost immediately, and that furnishes its own incentive to each seller to adhere to the known market. In the old days evasions of a definite agreement were much longer lived.

Supreme Court decisions under the present laws permit trade association data of transactions that have been closed, as in the maple flooring case, while data as to prices that are being quoted, as in the linseed oil case, are inadmissible, since they are related to future sales. It is difficult to see how any great hardship is involved in this particular point, for the competent sales organization generally knows just what is being quoted.

Sight is often lost of the fact that the typical self-respecting seller does not wish to undersell his competitors. His normal and natural ambition is to oversell his competitor, just as he wishes to produce better goods and render better service than his competitor. The will to do the constructive thing is what counts. It is fair to ask whether that would not be undermined if sellers were given freedom to enter into price agreements.

There is a wide range of activities in which trade associations may engage, fully and clearly within the law. It may be that the range should be increased or should be still more clearly defined, but anything done in that direction should be by way of increasing the will to play fair and not of providing temptation to do otherwise.

In respect to the improvement of trade associations, a suggestion will not be amiss. Very properly these associations aim to keep within the limitations of the anti-trust laws. There is no doubt that some members at times make inaccurate reports of their sales. In so doing they violate the common law against disseminating false information for the purpose of enhancing or undermining prices, and incidentally they injure the associations to which they belong.

Cheapness at a Price

SEEKING volume of business at the expense of prices has been much condemned by leaders in the steel industry and in other quarters, as tending to wipe out profits, if not to produce losses. Yet two independent investigations concur in finding that corporate profits depend not only on an increasing volume of business, but on a declining margin per sale. An analysis of profit ratios to sales and capital investment for 4000 corporations, as made by the National Industrial Conference Board and reviewed elsewhere, confirms the conclusion previously reached by Harry A. Bullis in an inquiry undertaken for the National Association of Cost Accountants and summarized in THE IRON AGE of Sept. 20. It showed that the general profit trend for larger corporations is upward and is accompanied by a decreased percentage of profit with respect to selling price.

Narrow profit margins have come to stay, says the Conference Board, because progress in industrial mechanization has produced an irresistible trend toward large-scale enterprise and mass production.

If this be a true picture of what confronts American industry and if all the big business of today is inevitably to become the bigger business of tomorrow, we are headed for a regime in which our boasted individualism may fare hardly. Mass output in demanding mass consumption puts the individual on a new pedestal of importance as a user of products. For him a new era of comfort may be had, but even though he be the gainer in this material way, the question may well be raised whether he will not suffer offsetting losses. The average American finds satisfactions in independence, in steering his own course in the business sea, that are more appealing than a position of nonentity in

an economic order whose chief promise is that he can buy cheaply.

In distribution also the march of the mail order houses and chain stores, and latterly of the scattered branches of the mail order houses, goes on without a halt. We are told that all this is to make for the same efficiency in distribution that as applied to manufacture has displaced thousands of men and forced them to find employment as purveyors of various forms of service. And now the question arises, What employment shall be found for the thousands who must be displaced in distribution lines, in the elimination of the individual wholesaler and the retail merchant, if the promises of new economies there are to be made good?

Enthusiasm for consolidations may be warranted by the cold facts of efficiency, and in certain branches of industry and of distribution further engrossment by large organizations may indeed be inevitable. But some of this cheapening of products and of merchandising may be dearly bought if it means the closing of the door of opportunity against the smaller manufacturer and merchant.

Instalment Buying and the Retailer

NOT so much discussion of easy payment buying has appeared in economic and financial reviews of late as we saw last year, particularly in the weeks following the publication of the Seligman report, which found that no economic danger inhered in widespread buying on the instalment plan. However, the American Bankers' Association gave the subject a place on its convention program at Philadelphia last week and a paper by C. F. Zimmerman of the Pennsylvania Bankers' Association pointedly opposed Professor Seligman's view. Thrift is a familiar preachment of the banker and it was quite to be expected that the author of the Philadelphia paper would sharply contrast families whose income as received is parceled out among instalment sellers with "those who, in addition to their habits of thrift, are learning to make good use of all the facilities of the bank."

But quite aside from the self-interest of a banker's view of the family exchequer, the following comment finds ample confirmation in the experience of tradesmen in many communities:

> Despite the fact that one of our leading economists has recently pronounced in favor of the "easy payment plan," most bankers continue to have the feeling that a great deal of instalment buying is an economic evil, and this conviction is based upon a knowledge of the havoc it works in so many families.
>
> The country banker knows so much about the results of mistaken policies in handling the family income, that he is compelled to doubt seriously the wisdom of instalment purchasing so far as it concerns an overwhelming percentage of the people. Possession of attractive, relatively expensive but practically unnecessary articles for a small down payment, has a lure in it that misleads and very seriously entangles those who have only their earnings to depend upon.

As the butcher, the baker, the grocer can testify, the instalment seller is the preferred creditor always, while the local tradesman waits long and anxiously and often in vain. The survey of retail buying now being made under Federal auspices would do a large service if it could discover how far instalment buying is responsible for the parlous condition of many a local tradesman which it is usual to charge entirely to the incompetency of the retailer himself.

Relative Value of Farm Products

THE latest reports set the volume of the cereal crops this year as follows:

	Bushels
Corn	2,931,000,000
Oats	1,454,000,000
Wheat	901,000,000
Barley	436,000,000
Rye	43,000,000

The value represented is estimated at about $4,400,000,000, which makes a high figure, often spoken of as created wealth, though more properly it represents a turnover. A large turnover going through one particular channel, whether it be agriculture, building construction, the manufacture of automobiles, or what not, involves further turnover, with broad ramifications. Business in steel and in other lines has already been stimulated by this year's crops.

It is the economic or financial position of the farmer that is so much talked of. The statistics themselves are somewhat confusing and when the politicians take the statistics they are likely to confound the confusion.

One difficulty arises from entirely recasting the most trustworthy of the long-range price series, that of the Bureau of Labor Statistics at Washington. The original series took the ten-year average, 1890-99, as base. The averages for 1913 were 165.8 for farm products and 135.2 for all commodities, showing that the farmer's position had greatly improved. Later a new system was instituted, taking 1913 as base, and thus giving the farmer very decidedly "the edge." For 1926 the figures, based on 1913, were 142.2 for farm products and 151.0 for all commodities, showing the farmer not altogether as well off as in 1913, but much better off than in 1890-99. Now the index numbers are based on 1926, and for last August showed 107.0 in farm products and 98.9 in all commodities.

A reasonably close approximation to the statistical position of the farmer at the present time, relative to 1890-99, may be obtained by taking the continued product of the respective numbers, which gives 252.3 for farm products and 201.9 for all commodities, relative to prices in the ten years 1890-99. Thus the farmer is shown to be 25 per cent better off. We are not trying to maintain that he is better off by 25 per cent or less or more than that amount, but it is clear that if statistics are to be used at all these statistics must be regarded. Indeed, a corresponding computation using the 1926 base, as recently carried back by the Bureau of Labor Statistics to 1913, shows farm products up 30 per cent, instead of 25 per cent, compared with their relationship in the 1890 decade.

Why should prices rise at all? Other things being equal, they should decline as we grow more efficient and can produce things, whether grain, farm implements, automobiles, breakfast food or tooth paste, with less physical and mental effort. Pig iron has declined relatively. Based on 1890-99 as 100 it now stands at about 142 against 202 for commodities in general. Its

relative decline has been 30 per cent against the relative advance of 25 per cent in farm products.

What the individual is interested in is profits, or if not precise profits then how much he can get of the particular things he feels he should have from the revenue the circumstances afford him. The farmer's complaint cannot be based upon the bare statistics, for on the whole, by any broad comparison, they are against him. He may base his contention upon the things which are sometimes referred to as yesterday's luxuries but today's necessities—whether he is getting his share of them—or he can urge that he should receive a larger proportion of what the general public eventually pays for his products. He is not likely to get public sympathy if he asks that the consumer be made to pay more money.

GERMANY continues to make strides in fuel conservation, far outstripping other countries in the briquetting of low-grade coals, as has been the case for many years. Nearly 36,500,000 tons of lignite briquets and 5,000,000 tons of coal briquets was the German output last year, or more than 82 per cent of a world total of about 50,000,000 tons. France was second at 5,000,000 tons and Belgium third at roundly 1,750,000 tons. Before the war Germany also had a long lead in the utilization of lignite, the 1913 output of lignite briquets being about 22,000,000 tons. The briquetting industry has been relatively unimportant in the United States, though large quantities of fuel suitable for such treatment are available. Last year the American output of briquets was 880,300 tons, as against 995,000 tons in 1926. This latter record was chiefly a product of the anthracite strike, that emergency causing some thousands of consumers to turn to briquets for the first time. There is, however, some growth in their use apart from such interruptions of the regular fuel supply. The first statistical survey, made in 1907, showed a total of but 66,524 tons of briquets. By 1923 there had been nearly a ten-fold increase, or to about 700,000 tons.

INDICATIONS of two months ago that 1928 would make a new high record in steel ingot production are strengthened by the returns for September, given on another page. We have only to exceed by 1 per cent, in October, November and December, the relatively low production in the last three months of 1927. As September was 27 per cent ahead of September, 1927, and as the mills have come into October with excellent backlogs, the prospects are that the output of these three months will have a good margin over last year's final quarter. For the elapsed nine months the gain has been 9.3 per cent over 1927 and 4.25 per cent above 1926, the record year, after allowing for crucible and electric steel ingots, reported monthly in 1926 but not so reported now.

CORRESPONDENCE

Two Authors Comment on a Metallurgical Book Review

To the Editor: I have had my attention called to the review of my recent book entitled "An Introduction to the Metallurgy of Iron and Steel," which appeared on page 1826 of your issue for June 28.

I am naturally pleased with the reviewer's approval of my policy of numerous illustrations. This policy was pursued with intent and has apparently pleased many of the readers of the book also. I fear that the reviewer's examination of the book was rather casual, however, for he states that "seventeen pages are used to describe the acid open-hearth process; three are made to suffice for the basic variety." If he had examined the text more carefully he would have seen that over thirteen out of the seventeen pages which he ascribes to the acid open-hearth process consist largely of illustrations of furnaces which might apply to both processes, the remainder of the thirteen pages being text which also applies to both processes, so that the proportion is more nearly in the ratio of four pages for the acid open-hearth process to three pages for the basic open hearth. After pointing out in the text and by means of charts the enormous tonnage of basic open-hearth produced as compared with acid I decided to discuss the acid open-hearth process first, partly because it came first historically and partly because of its importance where the highest quality of steel is to be considered. It is also true I think that the acid open-hearth process is much better standardized than the basic and a full discussion of the details of the latter process would take more space than could be devoted to it in a book of this character. I therefore contented myself with describing the chief differences between the basic open-hearth and the acid open-hearth processes while going into some detail in regard to the acid open-hearth practice.

The reviewer also bemoans the absence of a complete exposition of the theories for the hardening of steel and accuses me of parrying the question by referring the student to Sauveur's work published in 1920 and of being unfair to Jeffries and Archer and their slip interference theory. If he will read my reference more carefully he will notice that I refer not only to Sauveur's 1920 edition but to his 1926 edition which contains a brief description, in Doctor Jeffries' own words, of the Jeffries and Archer theory. Both references were given intentionally, because the earlier theories were more fully discussed in the 1920 edition while the later edition attempts to bring the subject up to date in the customary impartial manner for which Doctor Sauveur is noted. As the reviewer indicates, however, a full discussion of the hardening theories would be very much out of place in an elementary textbook. I believe Doctor Jeffries and Mr. Archer would be the first to resent any charge of unfairness on my part and there is an implied criticism of Doctor Sauveur in the review which it would be difficult to justify. H. M. BOYLSTON.

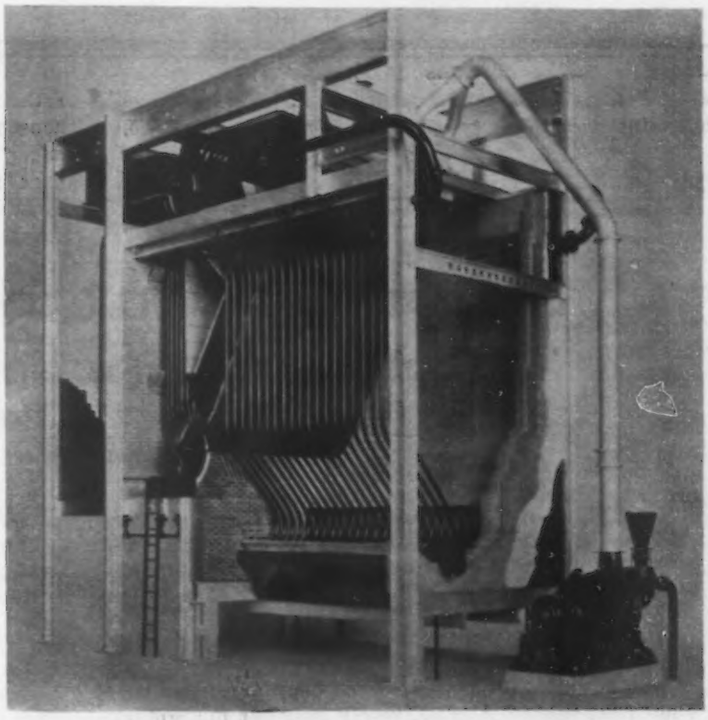
Cleveland, Sept. 20.

To the Editor: It is only today that I note in your issue of June 28 a review of Professor Boylston's book entitled "An Introduction to the Metallurgy of Iron and Steel." I quote as follows from the reviewer's remarks:

> "Knowing the author's constant association with Professor Sauveur of Harvard University, and the latter's published views on the hardness of beta iron, the reviewer looked with interest for an exposition of the hardening theory. But alas, the question is neatly parried by referring the interested student to Sauveur's work published in 1920. This hardly seems fair to Professor Boylston's fellow townsmen, Messrs. Jeffries and Archer, who are widely credited with having proposed a very understandable

Model of Water-Cooled Boiler Furnace

AT the request of the Smithsonian Institution, Washington, the Erie City Iron Works, Erie, Pa., has built a model of its Seymour water-cooled furnace for permanent display in the institution. This has been made on a scale of 1 in. to the foot and, as shown in the illustration, has parts cut away enough so that the entire construction can be seen. It is a three-drum boiler with integral economizer and designed to be fired with powdered coal from a unit-type pulverizer



and useful theory of hardening in more recent years."

It is to be inferred from this criticism that if the reader followed the author's advice he would find in my book, "The Metallography and Heat Treatment of Iron and Steel," a description of my personal views on the hardening of steel to the exclusion, or, at least, belittling of the views held by others. This is contrary to facts. He would find that all theories that have survived are as accurately and impartially presented as it was in my power to do. He would find on pages 256 and 257, Jeffries and Archer's theory described in Doctor Jeffries' own words in a statement prepared by him as a reply to my questionnaire. I have made it a rigid rule in my writings designed to instruct students never to emphasize my own views, and I trust that I have not failed in this instance.

In referring the reader to my book, I am sure that Professor Boylston believed, and believed rightly, that in so doing he was referring to an impartial treatment of this important question and not merely to an exposition of my personal views. That is why he did not consider it necessary to deal with the subject at greater length in his own book.

ALBERT SAUVEUR.

Cambridge, Mass., Sept. 10.

Everyone who dislikes to work at a rocking bench or to eat at a jiggling table will be interested in a suggestion contained in the September issue of *Oxy-Acetylene Tips*. Legs of movable work-tables and benches may be made of pipe, the lower ends of which are threaded and fitted with an ordinary sleeve coupling or pipe cap. Such caps may then be screwed up and down to fit irregularities in the flooring, as they chance to occur.

Obscure Cause of Spalled Brick in Oil-Fired Furnaces

Bricks in a furnace or boiler setting fired with fuel oil usually fail by spalling, whereas in a similar one fired with powdered coal they fail by slagging. To discover the reason for this difference in action, the United States Bureau of Mines and the American Society of Mechanical Engineers have cooperated in a study on two large boilers.

The rate of heat liberation in the oil-fired was much higher than in the powdered-coal furnace, but the maximum temperatures of the gases observed were the same, 2800 deg. Fahr. The maximum temperatures measured were somewhat higher in the oil-fired furnace at the positions where the flame impinged on the wall. The temperature gradient plotted for the first 6 in. of the hot side of the furnace wall was no greater in the oil-fired than in the coal-fired furnace.

The rate of change in temperature when the furnaces were banked or fired up was nearly the same. The rate and frequency of change of temperature during steaming were no greater in one than in the other. There is not sufficient evidence to warrant the acceptance of change of temperature as the only cause of the greater spalling in the oil-fired furnace, and differences in some other factors may be expected.

The chemical composition of the ash of the fuels and of the slags from the walls differed materially. It is possible that some such mineral formed in combination of brick and ash from oil fuel is sensitive to thermal shock; or the mineral may have a much different thermal expansion than the brick, and spalling result from the difference in the contraction during cooling.

Schedule of the next instalments of the ***Business Analysis and Forecast****, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows:* ***Oct. 18****—Position of Iron and Steel Producers;* ***Nov. 1****—Activity in Steel Consuming Industries.*

Iron and Steel Markets

Steel Output Still Rising

October Promises to Be Peak Month in Steel Production and Shipments—Buoyancy of Demand Surprising—Scrap and Semi-Finished Steel Higher

WITH steel production rising to what promises to be a new peak, demand shows unexpected buoyancy and the price structure, from primary materials to finished products, continues to strengthen.

In steel ingot output per day, September reached the highest average since the record-breaking rate of April. In total production the month fell less than 1 per cent behind August, which had two more working days. Mill operations are still expanding, now averaging 90 per cent, if not higher, and in view of the large volume of business on mill books, October is expected to be the high month of the year in both output and shipments. That total production for 1928 will establish a new record now seems assured, since the last quarter need only exceed the relatively poor performance of the same period in 1927 by 1 per cent to effect that result.

The continued flow of new business in finished steel is impressive, following last month's heavy specifying against expiring contracts. October orders for bars, sheets, shapes and plates, though in most districts at a lessened rate, are being freely placed at the advanced prices ruling in this quarter. At Chicago, sales were particularly heavy, equaling those of any week this year, not excluding periods when bookings were swelled by large purchases of rails and track supplies.

Meanwhile pressure for deliveries has increased in proportion to the expansion in mill backlogs. In bars and sheets producers are from three to five weeks behind in shipments. A rise in sheet output to 95 per cent of capacity reflects the efforts of mills to satisfy their customers.

The outlook for a sustained rate of steel consumption is reassuring, notwithstanding the large volume of steel now being taken by the trade. The automobile industry is not producing at so rapid a pace as in September, but output for the quarter will probably exceed that for the fourth quarter of 1927 and other recent years. That no slump is in early prospect is indicated by continued efforts of motor car companies to place contracts for sheets and strip steel for the first quarter of 1929.

The farm implement industry, which is completing additions to its plant capacity, is expanding, rather than contracting, its production.

Building work taking structural steel shows no signs of entering a period of reaction. New projects calling for nearly 82,000 tons of fabricated steel were added to the list of pending inquiries during the week. Awards totaled 33,000 tons.

Tin plate production, at 75 to 80 per cent of capacity, reflects a seasonal decline in business, and jobbing demand for wire products is disappointing, but offsetting tonnage will come from the railroads.

Inquiries for 2300 freight cars have been issued, and orders have been placed for 1500 cars to be built in railroad shops. An Eastern trunk line has closed for 46,000 tons of rails and 14,000 tons of accessories, and the Chesapeake & Ohio has bought 15,000 tons of track supplies to supplement its rail purchase of two weeks ago. The Pennsylvania will open bids Oct. 15 on 160,000 tons of rails with an option on 70 per cent more.

The strength of the price situation is emphasized by the rising trend of primary materials. Heavy steel scrap has advanced another 50c. a ton at Pittsburgh and St. Louis, while prices at Chicago and Cincinnati have gone up 75c. and $1 a ton, respectively. A leading independent steel company may resort to duplexing to reduce its scrap requirements.

Increasing foundry melt and the expanding raw material needs of steel companies have put pig iron sellers in a strong position. Malleable and Bessemer pig iron in the Valleys have gone up 25c. a ton, and another advance at Chicago is looked for.

Billets, slabs and sheet bars are now commanding $33 per ton, Pittsburgh or Youngstown, an advance of $1 over the price that ruled on most third quarter contracts.

To simplify and stabilize quotations on hot-rolled strip steel, which now takes three base prices, makers have announced a new card of extras for width and gage. One base price will apply on all sizes from 1½ in. to 24 in., extras ranging from 5c. per 100 lb. upward. The new prices are 2c., Pittsburgh, and 2.10c., Chicago, but in view of the fact that nearly all buyers are covered for the remainder of the year at 1.90c., Pittsburgh, the effectiveness of the change will date from Jan. 1. Wide strips will take considerably lower net prices under the new extras.

THE IRON AGE composite prices remain unchanged, that for pig iron at $17.84 a ton and that for finished steel at 2.362c. a lb.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

Pig Iron, Per Gross Ton:	Oct. 9, 1928	Oct. 2, 1928	Sept. 11, 1928	Oct. 10, 1927
No. 2 fdy., Philadelphia	$20.76	$20.76	$20.26	$20.26
No. 2, Valley furnace	17.00	17.00	17.00	17.50
No. 2, Southern, Cin'ti	19.94	19.94	19.94	20.94
No. 2, Birmingham	16.25	16.25	16.25	17.25
No. 2 foundry, Chicago*	18.50	18.50	18.00	19.50
Basic, del'd eastern Pa.	19.00	19.00	19.00	20.00
Basic, Valley furnace	17.00	17.00	16.25	17.00
Valley Bessemer, del'd P'gh	**19.26**	19.01	19.01	19.76
Malleable, Chicago*	18.50	18.50	18.00	19.50
Malleable, Valley	**17.50**	17.25	17.25	17.50
Gray forge, Pittsburgh	18.26	18.26	18.26	18.76
L. S. charcoal, Chicago	27.04	27.04	27.04	27.04
Ferromanganese, furnace	105.00	105.00	105.00	90.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	36.00	36.00	36.00	36.00
Bess. billets, Pittsburgh	**33.00**	32.00	32.00	33.00
O.-h. billets, Pittsburgh	**33.00**	32.00	32.00	33.00
O.-h. sheet bars, P'gh	**33.00**	32.00	32.00	34.00
Forging billets, P'gh	38.00	38.00	38.00	38.00
O.-h. billets, Phila	37.30	37.30	37.30	38.30
Wire rods, Pittsburgh	42.00	42.00	42.00	43.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb	1.90	1.90	1.90	1.75
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.12	2.12	2.12	2.07
Iron bars, Chicago	2.00	2.00	2.00	1.90
Steel bars, Pittsburgh	1.90	1.90	1.90	1.75
Steel bars, Chicago	2.00	2.00	2.00	1.85
Steel bars, New York	2.24	2.24	2.24	2.09
Tank plates, Pittsburgh	1.90	1.90	1.90	1.75
Tank plates, Chicago	2.00	2.00	2.00	1.85
Tank plates, New York	2.22½	2.22½	2.17½	2.09
Beams, Pittsburgh	1.90	1.90	1.90	1.75
Beams, Chicago	2.00	2.00	2.00	1.85
Beams, New York	2.19½	2.19½	2.14½	2.09
Steel hoops, Pittsburgh	2.20	2.20	2.20	2.30

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Sheets, Nails and Wire,	Oct. 9, 1928	Oct. 2, 1928	Sept. 11, 1928	Oct. 10, 1927
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	2.75	2.75	2.65	2.90
Sheets, black, No. 24, Chicago dist. mill	2.75	2.75	2.75	3.10
Sheets, galv., No. 24, P'gh	3.50	3.50	3.40	3.75
Sheets, galv. No. 24, Chicago dist. mill	3.60	3.60	3.60	3.95
Sheets, blue, 9 & 10, P'gh	2.00	2.00	2.00	2.15
Sheets, blue, 9 & 10, Chicago dist. mill	2.10	2.10	2.10	2.35
Wire nails, Pittsburgh	2.55	2.55	2.55	2.55
Wire nails, Chicago dist. mill	2.60	2.60	2.60	2.60
Plain wire, Pittsburgh	2.40	2.40	2.40	2.40
Plain wire, Chicago dist. mill	2.45	2.45	2.45	2.45
Barbed wire, galv., Pittsburgh	3.20	3.20	3.20	3.25
Barbed wire, galv., Chicago dist. mill	3.25	3.25	3.25	3.30
Tin plate, 100 lb. box, P'gh	$5.25	$5.25	$5.25	$5.50
Old Material, Per Gross Ton:				
Heavy melting steel, P'gh	**$17.50**	$17.00	$16.75	$15.00
Heavy melting steel, Phila	16.00	16.00	15.00	14.00
Heavy melting steel, Chicago	**14.00**	13.25	13.00	11.75
Carwheels, Chicago	13.75	13.75	13.50	13.50
Carwheels, Philadelphia	16.50	16.50	15.50	15.50
No. 1 cast, Pittsburgh	15.00	15.00	15.00	14.75
No. 1 cast, Philadelphia	17.00	17.00	16.00	16.50
No. 1 cast, Ch'go (net ton)	**15.50**	15.00	15.00	14.50
No. 1 RR. wrot, Philadelphia	15.50	15.50	14.00	15.50
No. 1 RR. wrot, Chicago (net)	**12.75**	12.00	12.00	10.25
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$2.75	$2.75	$2.75	$2.85
Foundry coke, prompt	3.75	3.75	3.75	4.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	15.25	15.25	14.75	13.25
Electrolytic copper, refinery	15.00	15.00	14.50	12.95
Zinc, St. Louis	6.25	6.25	6.25	6.07½
Zinc, New York	6.60	6.60	6.60	6.42½
Lead, St. Louis	6.32½	6.32½	6.25	6.00
Lead, New York	6.50	6.50	6.40	6.25
Tin (Straits), New York	*48.50*	49.75	47.12½	58.50
Antimony (Asiatic), N. Y.	11.50	11.50	10.62½	11.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

Operations Gain As Ordering of Steel Increases Mill Backlogs—Heavy Melting Steel Sold at $18

PITTSBURGH, Oct. 9.—Reports are somewhat mixed as to the amount of new business in the first full week of the final quarter of the year, but tonnages entered in most products and on most makers' books were again large. It is probable that no small part of the entries were of orders that had been received in district offices during the closing days of September and did not reach general offices until the past week. But the fact remains that bookings are of sufficient size to necessitate some enlargement of ingot production. With the Youngstown district works running at almost full physical capacity and a similar condition at Johnstown and undiminished operations in Pittsburgh and Wheeling, it is estimated that output for the combined districts is not far from 90 per cent of capacity, or substantially at the peak rate of the early part of the year.

The Carnegie Steel Co. has put on another blast furnace, and the lighting of an additional furnace at the Johnstown, Pa., works of Bethlehem Steel Co., leaves only one idle stack in a group of nine there.

Bar mills are committed for three to four weeks. Sheet mills are sold up for a slightly longer period, and a reflection of the anxiety for deliveries is to be had in the statement that sheet mill operations are at 95 per cent of capacity, or higher. Some stimulation has been given specifications for nails by the fact that some low-priced contracts expire by limitation Oct. 10. The quiet spots are tin plate and welded pipe. Business in railroad track supplies is light, but betterment is expected as the roads place contracts for their 1929 rail needs.

October shows signs of being the biggest month of the year in production and shipments. These results are pretty definitely assured by the volume of business now on makers' books; the question is whether new business will be in keeping with completed orders.

Makers of semi-finished steel appear to have been successful in securing part of the advances they set out to obtain on tonnage for this quarter.

Sheet makers report little resistance to the higher prices they are asking on fourth quarter tonnages, and there is no evidence that less than 1.90c. is being done in the heavy tonnage products—plates, bars and shapes. The general undertone of the market is one of firmness, but it also is observed that mills are well supplied with orders and not in need of more to sustain economical operating schedules, while consumers are covered on the immediate requirements too fully to have occasion to add greatly to their commitments.

Another advance in heavy melting steel, which has carried it to $18 at two or possibly three points in this district, or $4 a ton advance from the low point of early summer, stands out among the primary materials. The recent advance in basic iron appears to have made consumers a little cautious about open inquiry in the fear

of bidding the market up on themselves.

Pig Iron.—Demand for basic iron still is strong, but the steep rise in the price a week ago has led consumers to try private negotiation as a means of securing needed supplies. No sales have come to light since those of a week ago, which embraced one lot of 2000 to 3000 tons at $16.50, Valley furnace basis, instead of $16 as then reported, and another of 2200 tons at $17, Valley furnace. The market as a whole is quiet, with sales of foundry, Bessemer and malleable grades chiefly in carload lots. Basic iron is hard to obtain, as the principal production for market is by steel manufacturers, who, at this juncture, feel they are going to need all they have or will make in the next 30 or 60 days. Demand is for iron for immediate shipment. Malleable and Bessemer iron are more firmly held, and since production for market is confined to a few furnaces, makers are in a position to insist on higher prices. Small sales of these grades have been made at $17.50, Valley furnace, and that price now appears to be as low as any to be had. The Carnegie Steel Co. has put on a Duquesne furnace and the Bethlehem Steel Co. one of its Cambria group at Johnstown, Pa. The former now has 29 of its 49 furnaces in production and eight of the nine usable furnaces at Johnstown are active.

Prices per gross ton, f.o.b. Valley furnace:

Basic	$17.00
Bessemer	17.50
Gray forge	16.50
No. 2 foundry	17.00
No. 3 foundry	16.50
Malleable	17.50
Low phos., copper free	26.50

Freight rate to Pittsburgh or Cleveland district, $1.76.

Semi-Finished Steel.—Fourth quarter contract prices of billets, slabs and sheet bars are becoming more clearly defined. Several billet and slab contracts have been made at $33 per ton, Pittsburgh, for 4 x 4-in. billets and the equivalent area of slabs. This price is a $1 advance over the third quarter contract price, but it is also $1 a ton under what several producers had announced and still are quoting as the fourth quarter price. Strip makers, who take a considerable part of the commercial tonnage of billets and slabs, have been unsuccessful in getting higher prices for this quarter on strips, and therefore it has not been easy to get them interested in semi-finished steel at an advance. Most of them have sizable stocks bought at third quarter prices. Non-integrated sheet and tin plate manufacturers also seem to have been able to place considerable tonnage prior to the advance. Virtually all the makers of sheet bars have named $33, Pittsburgh, as the final quarter contract price. Base size billets and slabs now are fairly quotable at $33 to $34, with the usual extra of $1 a ton for smaller sizes. Wire rods are firm at $42, base Pittsburgh, and there is a fairly good movement of them.

Bars, Plates and Shapes.—After the flood of tonnage releases last month, it was commonly expected that business this month would be on a smaller scale, but this has not been the case in the first week of October. New business is reported by one local office to have amounted in the past week to expectations for the entire month, while the tonnage entered by another company was more than 40 per cent in excess of that of the final week in September. It is possible that some business placed in district offices late in September did not reach general offices until the past week. In any event, mills here have a full month's obligation in bars and almost as much specified tonnage in shapes and plates. Promises of delivery on bars still are from four to five weeks. There are no suggestions of less than 1.90c., base, even to large-lot buyers, while a good many contracts have been written at 1.95c. The 2c. price still refers chiefly to very small or otherwise unattractive orders.

Rails and Track Supplies.—The Pennsylvania Railroad standard-section rail inquiry, calling for 160,000 tons plus a 70 per cent option, and for a large tonnage of track supplies, has appeared. The New York Central and Baltimore & Ohio inquiries are looked for soon. Current business in rails and track supplies is only moderately active.

Wire Products.—Prices are firm, but with no sign of change in prices, buyers are ordering entirely in keeping with real needs. Plain wire is moving well, but this district has lost much of its former business in fence and barbed wire to mills more conveniently located in relation to consuming centers. Nail business is steady, but not active.

Tubular Goods. — Mills making seamless pipe still are well supplied with orders, and demand for that class of pipe still is reported as good. No line pipe business of account having recently been let, producers are beginning to cut into their backlogs. Welded pipe for oil well development and for building and construction work is only moderately active. Shipments of mechanical tubing exceed new buying. Mill operations do not change much, but a letdown seems probable in the last two months of the year unless there are some pipe line orders. Laying of lines is out of the question during the winter and early spring, but orders might develop during the winter.

Sheets.—Makers in this territory see no material slackening either in demand or mill engagement, but, what is probably more important to them, there is no great resistance to fourth quarter prices or the lower cash discount, which became effective Oct. 1. Considerable fourth quarter business in the common finishes has been written at 2.75c., base Pittsburgh, for black; 3.50c., base, for galvanized, and 2c., base, for blue annealed. The effectiveness of these prices is delayed somewhat by the fact that most makers have much tonnage yet to deliver at the lower third quarter prices. A desire to clean up this business, coupled with the continued insistence of buyers for deliveries, is reflected in very high mill operations. The American Sheet & Tin Plate Co. is operating at practically full physical capacity. Sheet making capacity as a whole is engaged at 95 per cent or slightly higher.

Tin Plate.—Business is in its usual

The Iron Age Composite Prices

Finished Steel

Oct. 9, 1928, 2.362c. a Lb.

One week ago	2.362c.
One month ago	2.348c.
One year ago	2.331c.
10-year pre-war average	1.689c.

Based on steel bars, beams, tank plates, wire, rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low	
1928	2.364c.,	Feb. 14;	2.314c.,	Jan. 3
1927	2.453c.,	Jan. 4;	2.293c.,	Oct. 25
1926	2.453c.,	Jan. 5;	2.403c.,	May 18
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15;	2.460c.,	Oct. 14
1923	2.824c.,	Apr. 24;	2.446c.,	Jan. 2

Pig Iron

Oct. 9, 1928, $17.84 a Gross Ton

One week ago	$17.84
One month ago	17.46
One year ago	18.09
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1928	$17.84,	Oct. 2;	$17.04,	July 24
1927	19.71,	Jan. 4;	17.54,	Nov. 1
1926	21.54,	Jan. 5;	19.46,	July 13
1925	22.50,	Jan. 13;	18.96,	July 7
1924	22.88,	Feb. 26;	19.21,	Nov. 3
1923	30.86,	Mar. 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c. to 2.00c.
F.o.b. Chicago	2.00c. to 2.10c.
Del'd Philadelphia	2.22c. to 2.32c.
Del'd New York	2.24c. to 2.34c.
Del'd Cleveland	1.92½c. to 2.05c.
F.o.b. Cleveland	1.90c. to 2.05c.
F.o.b. Lackawanna	2.00c. to 2.10c.
F.o.b. Birmingham	2.15c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills, 40, 50 and 60-ft. lengths	2.00c.
F.o.b. Pittsburgh mills, cut lengths	2.25c.
F.o.b. Birmingham	2.15c.

Rail Steel

F.o.b. mills east of Chicago dist.	1.85c.
F.o.b. Chicago Heights mill	1.95c.

Iron

Common iron, f.o.b. Chicago	2.00c. to 2.10c.
Refined iron, f.o.b. P'gh mills	2.75c.
Common iron, del'd Philadelphia	2.12c.
Common iron, del'd New York	2.14c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mills	1.90c. to 2.00c.
F.o.b. Chicago	2.00c. to 2.10c.
F.o.b. Birmingham	2.15c.
Del'd Cleveland	2.09c. to 2.19c.
Del'd Philadelphia	2.15c. to 2.25c.
F.o.b. Coatesville	2.05c. to 2.15c.
F.o.b. Sparrows Point	2.05c. to 2.15c.
F.o.b. Lackawanna	2.00c. to 2.10c.
Del'd New York	2.22½c. to 2.32½c.
C.i.f. Pacific ports	2.20c. to 2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mills	1.90c. to 2.00c.
F.o.b. Chicago	2.00c. to 2.10c.
F.o.b. Birmingham	2.15c.
F.o.b. Lackawanna	2.00c. to 2.10c.
F.o.b. Bethlehem	2.05c. to 2.15c.
Del'd Cleveland	2.09c. to 2.19c.
Del'd Philadelphia	2.11c. to 2.21c.
Del'd New York	2.19½c. to 2.29½c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
Narrower than 3 in., P'gh	2.10c. to 2.20c.
From 3 in. to 6 in., P'gh	1.85c. to 2.00c.
6 in. and wider, P'gh	*1.75c. to 1.90c.
Narrower than 3 in., Chicago	2.30c.
From 3 to 6 in., Chicago	2.20c.
6 in. and wider, Chicago	2.00c.
Cotton ties, f.o.b. Atlantic and Gulf ports:	
Carload per 45-lb. bundle	$1.27
2000 bundle lots	1.25
Larger lots	1.23

*Mills follow plate or sheet prices according to gage on wider than 12 in.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mill	2.10c. to 2.20c.
Bars, f.o.b. Chicago	2.20c.
Bars, Cleveland	2.25c.
Shafting, ground, f.o.b. mill	*2.55c. to 3.50c.
Strips, P'gh	2.75c. to 2.85c.
Strips, Cleveland	2.75c. to 2.85c.
Strips, del'd Chicago	3.05c. to 3.15c.
Strips, Worcester	2.90c. to 3.00c.
Fender stock, Pittsburgh	4.25c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	$2.55
Galvanized nails	4.55
Galvanized staples	3.25
Polished staples	3.00
Cement coated nails	2.55

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.40
Annealed fence wire	2.55
Spring wire	3.40
Galv'd wire, No. 9	3.00
Barbed wire, galv'd	3.20
Barbed wire, painted	2.95

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester Mass., (wire) mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

F.o.b. Pittsburgh	$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. P'gh	2.00c.
Nos. 9 and 10, f.o.b. Chicago dist.	2.10c. to 2.20c.
Nos. 9 and 10, del'd Cleveland	2.19c.
Nos. 9 and 10, del'd Philadelphia	2.32c. to 2.42c.
Nos. 9 and 10, f.o.b. Birmingham	2.15c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh	2.75c.
No. 24, f.o.b. Chicago dist. mill	2.75c. to 2.85c.
No. 24, del'd Cleveland	2.94c.
No. 24, del'd Philadelphia	3.07c. to 3.17c.
No. 24, f.o.b. Birmingham	2.90c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade	3.85c. to 3.90c.
No. 24, f.o.b. Pittsburgh, B grade	3.65c. to 3.70c.

Galvanized

No. 24, f.o.b. Pittsburgh	3.50c. to 3.60c.
No. 24, f.o.b. Chicago dist. mill	3.60c. to 3.70c.
No. 24, del'd Cleveland	3.69c.
No. 24, del'd Philadelphia	3.82c. to 3.92c.
No. 24, f.o.b. Birmingham	3.65c. to 3.70c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.90c.
No. 28, f.o.b. Chicago dist. mill	3.10c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	4.00c.

Long Ternes

No. 24, 8-lb. coating, f.o.b. mill primes	4.10c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.25
Standard cokes, f.o.b. Gary	5.35

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)

(Per Package, 20 x 28 in.)

8-lb. coating I.C. $11.20	25-lb. coating I.C. $16.70
15-lb. coating I.C. 14.00	30-lb. coating I.C. 17.75
20-lb. coating I.C. 15.30	40-lb. coating I.C. 19.85

Alloy Steel Bars

(F.o.b. maker's mill)

Alloy Quality Bar Base, 2.75c.

S.A.E. Series Numbers		Alloy Differential	Net Price 100 Lb. Bars
2000	(½% Nickel)	$0.25	$3.00
2100	(1½% Nickel)	0.55	3.30
2300	(3½% Nickel)	1.50	4.25
2500	(5% Nickel)	2.25	5.00
3100	Nickel Chromium	0.55	3.30
3200	Nickel Chromium	1.35	4.10
3300	Nickel Chromium	3.80	6.55
3400	Nickel Chromium	3.20	5.95
4100	Chromium Molybdenum (0.15 to 0.25 Molybdenum)	0.50	3.25
4100	Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70	3.45
4600	Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel)	1.05	3.80
5100	Chromium Steel (0.60 to 0.90 Chromium)	0.35	3.10
5100	Chromium Steel (0.80 to 1.10 Chromium)	0.45	3.20
5100	Chromium Spring Steel	0.20	2.95
6100	Chromium Vanadium Bars	1.20	3.95
6100	Chromium Vanadium Spring Steel	0.95	3.70
9250	Silicon Manganese Spring Steel	0.25	3.00
Chromium Nickel Vanadium		1.50	4.25
Carbon Vanadium		0.95	3.70

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 down to and including 2½ in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

Slabs with sectional area of 16 in. or over carry the billet price; slabs with sectional area of 12 in. to 16 in. carry a $5 extra above the billet price and slabs with a sectional area under 12 in. carry the bar price.

Band sizes are 40c. per 100 lb. higher.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	36.00
Light (from rail steel), f.o.b. mill	34.00
Light (from billets), f.o.b. Ch'go mill	36.00

Track Equipment

	Base Per 100 Lb.
Spikes, ⅞ in. and larger	$2.80
Spikes, ½ in. and smaller	2.80
Spikes, boat and barge	3.00
Tie plates, steel	2.15
Angle bars	2.75
Track bolts, to steam railroads	$3.80 to 4.00
Track bolts, to jobbers, all sizes, per 100 count	70 per cent off list

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	42½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	¼ to ⅜	+19	+54
¼ to ⅜	47	30½	½	21	17
½	53	42½	¾	28	12
¾	58	47½	1 to 1½	30	14
1 to 1½	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1⅝ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 4½ in.	46	3¼ to 4½ in.	— 9
5 to 6 in.	40		

Beyond the above base discounts, the following extra discounts are given:

Lap Weld Steel		Charcoal Iron
Under 5000 lb.	4 Fives	1 Ten
5000 lb. to 12,000 lb.	5 Fives	2 Tens
12,000 lb. to 21,000 lb.	6 Fives	2 Tens & 2½
21,000 lb. and over	7 Fives	2 Tens & 5

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	63	3 in.	48
1¼ to 1½ in.	55	3¼ to 3½ in.	50
1¾ in.	39	4 in.	53
2 to 2¼ in.	34	4½, 5 and 6 in.	45
2½ to 2¾ in.	42		

Hot Rolled

2 and 2¼ in.	40	3¼ to 3½ in.	56
2½ and 2¾ in.	48	4 in.	59
3 in.	54	4½, 5 and 6 in.	48

Less carload, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base (carloads)	55
Carbon, 0.30% to 0.40%, base	50

Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

seasonal reaction, and mill operations are barely maintained at 75 to 80 per cent, with the average probably nearer the lower than the higher figure. General line tin plate is moving well and export business is of fair volume; these outlets are now the principal dependence of the mills.

Cold-Finished Steel Bars and Shafting.—The fourth quarter contract price is well established at 2.20c., base Pittsburgh, but it will be a month before it is reflected in invoice prices, as buyers generally had until the end of September to enter specifications on third quarter contracts. Shipments continue large, but most makers are able to supply demands from single turn operation of their mills.

Hot-Rolled Flats.—The first week of October has been rather light in new business, but makers are heavily supplied with orders and expect a full engagement of productive capacity throughout this month. The common expectation is that this will be a month of heavy production and shipments, but that it will fall short of last month and the month before in specifications and orders. Prices are steady. A new card of extras has been issued naming a base price and extras for all widths and gages of hot-rolled strip.

Cold-Rolled Strips.—Makers are running at a high rate and shipments are heavy, but new business moderated in the first week of the new quarter. Prices are well established at 2.75c., base, as a minimum.

Coke and Coal.—The spot furnace coke market still is very firm, but not quotably higher. More than 1000 beehive ovens of the H. C. Frick Coke Co. have been started up in the past fortnight, and a good-sized plant of the Hillman Coal & Coke Co. recently went into operation to take care of the needs of blast furnaces which either were being supplied with by-product coke or recently were blown in. A local steel company still is making purchases to supplement its own by-product oven production, and this demand is largely responsible for meager supplies of spot coke. The general market still is $2.75 per net ton at ovens. Spot foundry coke is moving well at unchanged prices. Excessive supplies of slack coal cause very low prices. The general coal market is weak with supplies quite ample for wants. A fair degree of activity and firmness is observed in household coal.

Old Material.—Heavy melting steel scrap has been sold at two points in this district at $18 and is reported to have sold at that figure at a third. In the past week sales of this grade into consumption have been made from $17 to $18. Steel works operations having increased further in the past week, consumption remains high and the market also derives strength from the fact that dealers are paying well to secure tonnages they expect the mills will want. Local dealers were paying $13 and $13.50, f.o.b. Detroit, or $17 to $17.50 here before the market was fully established at $17. It is said that this course was necessary, since an order, no matter at what price it is taken, is unprofitable unless the seller has some material with which to start shipments. Scrap rails have been sold at $17.50, compressed sheets up to $17.25 and railroad specialties up to $19.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Grades:	
Heavy melting steel	$17.50 to $18.00
Scrap rails	17.00 to 17.50
Compressed sheet steel	17.00 to 17.25
Bundled sheets, sides and ends	15.50 to 16.00
Cast iron carwheels	15.25 to 15.75
Sheet bar crops, ordinary	17.50
Heavy breakable cast	12.75 to 13.25
No. 2 railroad wrought	17.00 to 17.50
Heavy steel axle turnings	15.00 to 15.50
Machine shop turnings	11.00 to 11.50
Acid Open-Hearth Grades:	
Railr. knuckles and couplers	18.50 to 19.00
Railr. coil and leaf springs	18.50 to 19.00
Rolled steel wheels	18.50 to 19.00
Low phos. billet and bloom ends	20.00 to 20.50
Low phos., mill plates	18.50 to 19.00
Low phos., light grade	17.50 to 18.00
Low phos., sheet bar crops	18.50 to 19.00
Hvy. steel axle turnings	15.00 to 15.50
Electric Furnace Grades:	
Low phos. punchings	17.50 to 18.00
Hvy. steel axle turnings	15.00 to 15.50
Blast Furnace Grades:	
Short shoveling steel turnings	12.50 to 12.75
Short mixed borings and turnings	12.50 to 12.75
Cast iron borings	12.50 to 12.75
No. 2 busheling	11.25 to 11.75
Rolling Mill Grades:	
Steel car axles	18.50 to 19.50
No. 1 railroad wrought	12.50 to 13.00
Sheet bar crops	18.00 to 18.50
Cupola Grades:	
No. 1 cast	15.25 to 15.75
Rails 3 ft. and under	17.50 to 18.00

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Hoops	4.00c. to 4.50c.
Black sheets (No. 24), 25 or more bundles	3.45c.
Galv. sheets (No. 24), 25 or more bundles	4.30c.
Blue ann'l'd sheets (No. 10), 1 to 10 sheets	3.35c.
Galv. corrug. sheets (No. 28), per square	$4.31
Spikes, large	3.40c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Track bolts, all sizes, per 100 count,	60 per cent off list
Machine bolts, 100 count,	60 per cent off list
Carriage bolts, 100 count,	60 per cent off list
Nuts, all styles, 100 count,	60 per cent off list
Large rivets, base per 100 lb.	$3.50
Wire, black soft ann'l'd, base per 100 lb	$3.00 to 3.10
Wire, galv. soft, base per 100 lb.	3.00 to 3.10
Common wire nails, per keg	3.00
Cement coated nails, per keg	3.05

Railroad Equipment

Inquiries for 1300 Refrigerator and 1000 Ore Cars

LARGE inquiries reported during the week included 1000 refrigerator cars for use by the American Refrigerator Transit Co., 1000 ore cars for the Great Northern and 300 refrigerators for the Northern Refrigerator Car Co. Orders placed were largely with company shops and were featured by 1000 box cars and the rebuilding of 983 gondolas by the Pennsylvania and the rebuilding of 500 gondola cars by the Chicago, Burlington & Quincy. Locomotive inquiries included 20 for the Delaware, Lackawanna & Western and 10 for the Denver & Rio Grande Western. Details of the week's business follow:

Missouri Pacific has made inquiry for 1000 refrigerator cars for use by American Refrigerator Transit Co.

Canadian National Railways have ordered five Mountain type locomotives from Canadian Locomotive Co. These are in addition to 55 reported purchased last week.

Donner Steel Co., Buffalo, has ordered three 300-hp. oil-electric locomotives to be built jointly by Ingersoll-Rand Co., General Electric Co. and American Locomotive Co.

Swift & Co. have ordered 300 underframes from Bettendorf Co.

Delaware, Lackawanna & Western is inquiring for 20 4-8-4 type locomotives and two steel dining cars.

Chicago, Burlington & Quincy is rebuilding 500 composite gondola cars at its Galesburg, Ill., shops.

Great Northern is in the market for 1000 ore cars.

Northern Refrigerator Car Co. will buy 300 cars.

Chicago, Rock Island & Pacific is in the market for one 4-8-4 type locomotive.

Denver & Rio Grande Western will purchase 10 4-8-4 locomotives.

Pennsylvania Railroad will build 1000 steel box cars and increase the capacity of 983 gondolas from 50,000 to 70,000 lb. by substituting heavier trucks, at its Altoona, Pa., shops.

Fewer Stokers Sold

Sales of 162 mechanical stokers, with 51,572 hp., were made in August, compared with 193 with 59,859 hp. in July, according to reports received by the Department of Commerce from 11 leading manufacturers. Of the August sales 57 stokers with 7895 hp. were installed under fire-tube boilers and 105 with 43,677 hp. were installed under water-tube boilers. For the eight months ended August, 1022 stokers with 338,031 hp. were sold, against 1025 with 379,380 hp. for the corresponding period of 1927.

For transporting helium gas and other aircraft gases, the General American Tank Car Corporation is constructing a new type of car. It will be used by the aeronautical division of the Navy for shipping helium gas from the Government fields in Texas to Lakehurst, N. J., and to other dirigible ports. The conveyor weighs 200,000 lb., and has a capacity of 220,000 cu. ft. of gas.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and over	$33.00 to $34.00
Rerolling, under 4-in. to and including 1¾-in.	34.00 to 35.00
Forging	38.00 to 40.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer	$33.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger	$33.00 to $34.00
Smaller than 8 in. x 2 in.	34.00 to 35.00

Skelp

	Per Lb.
Grooved	1.90c. to 2.00c.
Sheared	1.90c. to 2.00c.
Universal	1.90c. to 2.00c.

Wire Rods

	Per Gross Ton
*Common soft, base	$42.00
Screw stock	$5.00 per ton over base

*Chicago mill base is $43. Cleveland mill base, $42.

Prices of Raw Material

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.55
Old range non-Bessemer, 51.50% iron	4.40
Mesabi Bessemer, 51.50% iron	4.40
Mesabi non-Bessemer, 51.50% iron	4.25
High phosphorus, 51.50% iron	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	*Per Unit*
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	10.00c.
Iron ore, Swedish, average 66% iron,	9.25c. to 9.50c.
Manganese ore, washed, 52% manganese, from the Caucasus	38c.
Manganese ore, Brazilian, African or Indian, basic 50%	37c. to 38c.
Tungsten ore, high grade, per unit, in 60% concentrates	$10.90 to $11.25
	Per Gross Ton
Chrome ore, 45 to 50% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.00 to $24.00
	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, delivered	50c. to 55c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	$2.75
Foundry, f.o.b. Connellsville prompt	$3.50 to 4.25
Foundry, by-product, Ch'go ovens.	8.00
Foundry, by-product, New England, del'd	11.00
Foundry, by-product, Newark or Jersey City, delivered	9.00 to 9.40
Foundry, Birmingham	5.00
Foundry, by-products, St. Louis, f.o.b. ovens	8.00
Foundry by-prod., del'd St. Louis.	9.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.40 to $1.80
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Gas coal, ¾-in., f.o.b. Pa. mines..	2.00 to 2.10
Mine run gas coal, f.o.b. Pa. mines	1.75 to 1.90
Steam slack, f.o.b. W. Pa. mines..	70c. to 80c.
Gas slack, f.o.b. W. Pa. mines....	1.00 to 1.20

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.	$105.00
Foreign, 80%, Atlantic or Gulf port, duty paid	105.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$33.00
Domestic, 16 to 19%	32.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$83.50 to $88.50
75%	130.00 to 140.00

	Per Gross Ton Furnace		*Per Gross Ton Furnace*
10%	$35.00	12%	$39.00
11%	37.00	14 to 16%	45.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		*Per Gross Ton*
10% $30.00	12%	$34.00
11% 32.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		*Per Gross Ton*
6% $23.00	10%	$28.00
7% 24.00	11%	30.00
8% 25.00	12%	32.00
9% 26.00		

Other Ferroalloys

Ferrotungsten, per lb., contained metal del'd	95c. to 98c.
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.00c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.15 to $3.65
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per gross ton	$91.00
Ferrophosphorus, electric 24%, f.o.b. Anniston, Ala., per gross ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium, fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	$17.00
No. 2 lump, Illinois and Kentucky mines.	$18.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.	$16.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	$32.50

Fire Clay

	Per 1000 f.o.b. Works First Quality	Second Quality
Pennsylvania	$43.00 to $46.00	$35.00 to $38.00
Maryland	43.00 to 46.00	35.00 to 38.00
New Jersey	50.00 to 65.00	
Ohio	43.00 to 46.00	35.00 to 38.00
Kentucky	43.00 to 46.00	35.00 to 38.00
Missouri	43.00 to 46.00	35.00 to 38.00
Illinois	43.00 to 46.00	35.00 to 38.00
Ground fire clay, per ton	7.00	

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$43.00
Chicago	52.00
Birmingham	50.00
Silica clay, per ton	$8.50 to 10.00

Magnesite Brick

	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00
Standard size	45.00

Chrome Brick

	Per Net Ton
Standard size	$45.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

Per 100 Pieces

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

	Per Cent Off List
†Machine bolts	70
†Carriage bolts	70
Lag bolts	70
Plow bolts, Nos. 1, 2, 3 and 7 heads	70
Hot-pressed nuts, blank or tapped, square	70
Hot-pressed nuts, blank or tapped, hexagons	70
C.p.c. and t. square or hex. nuts, blank or tapped	70
Washers*	6.75c. to 6.50c. per lb. off list

*F.o.b. Chicago, New York and Pittsburgh.

†Bolts with rolled thread up to and including ⅝ in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts

	Per Cent Off List
Semi-finished hexagon nuts	70
Semi-finished hexagon castellated nuts, S.A.E.	70
Stove bolts in packages, Pittsburgh	80, 10 and 2½
Stove bolts in packages, Chicago	75, 20, 10 and 5
Stove bolts in bulk, Pittsburgh	80, 10 and 5
Stove bolts in bulk, Chicago	75, 20, 10, 5 and 2½
Tire bolts	60, 5 and 5

Discounts of 70 per cent off on bolts and nuts applied on carload business. For less than carload orders discounts of 55 to 60 per cent apply.

Large Rivets

(½-In. and Larger)

	Base Per 100 Lb.
F.o.b. Pittsburgh or Cleveland	$2.90
F.o.b. Chicago	3.00

Small Rivets

(7/16-In. and Smaller)

	Per Cent Off List
F.o.b. Pittsburgh	70 and 10
F.o.b. Cleveland	70 and 10
F.o.b. Chicago	70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

	Per Cent Off List
Milled cap screws	80, 10 and 10
Milled standard set screws, case hardened,	80 and 10
Milled headless set screws, cut thread	80
Upset hex. head cap screws, U.S.S. thread,	85 and 5
Upset hex. cap screws, S.A.E. thread	85 and 5
Upset set screws	80, 10 and 10
Milled studs	70 and 5

Chicago

Heavier Mill Backlogs Add Strength to Steel Market—Specifications and Orders Exceed Current Output

CHICAGO, Oct. 9.—Added to the stability of the local steel market of a week ago is a decided gain in backlogs. With rails not an important factor, sales in the last seven days are fully equal to the best week of the year, not excepting periods of heavy track supply and rail buying. Specifications are unusually large, being well above output, and therefore are forcing deliveries further into the future. Heavier releases reflect not only a greater consuming demand, but also the necessity that users protect their needs against less frequent roll changes and deferred shipments. Fourth quarter contracting is in full swing and there are liberal purchases for nearby needs. Shipments of steel from Chicago mills in the first nine months of this year were 20 per cent heavier than in the corresponding period of last year, and order books are larger than a year ago.

The building industry, though slower than in the summer months, is still active and promises to take a good volume of steel throughout the fall. Several sizable rail inquiries from Western railroads are in the making. Fresh inquiries for 2300 freight cars lend encouragement to car shops. Two Western railroads, the Santa Fe and the Illinois Central, may soon come into the market for freight equipment.

Prices for plates, shapes and bars are steady at 2c. to 2.10c. per lb., Chicago.

The Inland Steel Co. has blown out No. 1 stack for relining. It will be out of service about 60 days. Twenty-three of 36 steel mill furnaces are now in blast in this district.

Pig Iron.—This market is stronger than a week ago. Prices for Northern foundry iron are firm at $18.50 a ton, base, and the demand for prompt shipments easily keeps pace with current offerings. Rush orders are more numerous than in many years. A Chicago melter will buy 4000 to 5000 tons for delivery in October and November and a user in western Michigan will take 5000 tons for first quarter. More than 1500 tons of charcoal iron has been ordered at $24 a ton, furnace. A cargo of Lake Erie iron has arrived at Milwaukee. The silvery market is active and prices are strong.

Prices per gross ton at Chicago:

N'th'n No. 2 fdy., sil. 1.75 to 2.25	$18.50
N'th'n No. 1 fdy., sil. 2.25 to 2.75	19.00
Malleable, not over 2.25 sil	18.50
High phosphorus	18.50
Lake Super. charcoal, sil. 1.50	27.04
So'th'n No. 2 fdy. (all rail)	22.26
Low phos., sil. 1 to 2, copper free	$28.50 to 29.00
Silvery, sil. 8 per cent	29.79
Bess. ferrosilicon, 14-15%	46.79

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

Ferroalloys.—A 1500-ton cargo of 20 per cent spiegeleisen has been docked at Chicago. This was shipped from England and transferred to a Lake boat at Montreal. The bulk of this tonnage is said to be under contract. Specifications for ferromanganese are heavy.

Prices delivered Chicago: 80 per cent ferromanganese, $112.56; 50 per cent ferrosilicon, $83.50 to $87.50; spiegeleisen, 19 to 21 per cent, $40.76.

Plates.—Of special interest in this market is the fact that definite car inquiries are now before the trade. The American Refrigerator Transit Co. is asking for 1000 cars. This company is a subsidiary of the Missouri Pacific, which is expected to come into the market soon for cars for its own use. The Northern Pacific will take prices on 1000 ore cars and later may buy 500 gondolas. The Northern Refrigerator Car Co. will buy 300 refrigerator cars and the Santa Fe is a step nearer entering the market for freight equipment. Several small and scattered tank inquiries are taking shape on the Pacific Coast. Tank plate business in the mid-Continent fields is quiet. A fabricator in Beaumont, Tex., will use 1200 tons of plates, which will be shipped from Atlantic seaboard mills, for tanks to be erected in the Southwest. Specifications from pipe makers are of moderate size and not in line with recent heavy purchases of gas pipe because difficulties in obtaining franchises are delaying the start of construction programs. Miscellaneous orders for plates are numerous, and many users in the manufacturing trade have placed fourth quarter contracts at prices that range from 2c. per lb. to 2.10c., Chicago. Specifications from railroad shops, where car rebuilding operations are going on, are of fair size. The Burlington will reconstruct 500 composite gondola cars at its Galesburg, Ill., shops.

Mill prices on plates, per lb.: 2c. to 2.10c. base Chicago.

Bars.—Forward contracting in soft steel bars has mounted rapidly in the week, and specifications are fully equal to the best week so far this year. Roll changes are much less frequent, and users are finding that mill schedules do not in all cases meet their immediate requirements. Deliveries are from three to six weeks and the range of sizes that can be had in the shorter time is rapidly narrowing. Prices are firm at 2c. to 2.10c. per lb., Chicago. Agricultural implement manufacturers are operating at an unchanged rate. Schedules later in the year will be heavier because plant additions are rapidly being put to use. The iron bar market is moderately active in spot sales, but forward contracting is slow. Prices for alloy steel bars are steady and shipments are at nearly the capacity of Chicago mills. Spot purchases are more numerous. Schedules of the automobile industry are still heavy. Rail steel bars are firm at 1.95c. per lb., Chicago Heights. Backlogs are heavy, and output continues on a double turn basis. Specifications from bed manufacturers are liberal. Shipments of reinforcing bars are unusually heavy for this time of year.

Mill prices per lb.: Soft steel bars, 2c. to 2.10c., base, Chicago; common bar iron, 2c. to 2.10c., base, Chicago; rail steel bars, 1.95c., base, Chicago Heights mill.

Bolts, Nuts and Rivets.—Total specifications are not equal to output at 65 per cent of capacity. The margin of production over shipments is being used by makers to build up stocks that have been depleted for some time. The trade expects farm implement manufacturers to take larger quantities before the end of this month.

Structural Material. — Structural awards for the week total more than 8000 tons. Foremost is 4500 tons for a building at Crystal City, Mo., for the Pittsburgh Plate Glass Co. A foundry building at Rockford, Ill., will take 1500 tons and bridges for the Chicago, Burlington & Quincy call for 1200 tons. Earlier reports were to the effect that the Bethlehem Steel Co. would fabricate near Buffalo the 38,500 tons of steel needed for the Mercantile Mart, Chicago. It now develops that the steel is being shipped to Chicago in mill lengths, a move that must be completed before the close of navigation. The work of fabricating this steel will be done in Chicago shops. This contract was taken before final plans had been completed and there may be a sizable overrun in tonnage above the preliminary estimates. Those in close touch with this contract and also the Opera Building in Chicago believe that the extra steel needed will not exceed 5000 tons on each of the two jobs. The Starrett's Building Co. has been awarded the general contract for the 75-story Chicago Tower and Apparel Mart. This structure will make use of air rights, and, according to preliminary estimates, will require 75,000 tons of structural steel and 12,000 tons of reinforcing bars. Several projects in Milwaukee are taking more definite shape. In fact, the outlook in that city is favorable for early action on several sizable structures. Shops to the west of the Mississippi River are in need of orders.

Mill prices on plain material, per lb.: 2c. to 2.10c. base, Chicago.

Rails and Track Supplies.—A railroad operating east from Chicago has closed for 46,000 tons of standard-section rails. About 14,000 tons of accessories will go with this order. The 12,000 to 15,000 tons of track supplies needed by the Chesapeake & Ohio are now said to have been placed in the East. The Pennsylvania is asking for 272,000 tons of rails as a maximum. Last year this railroad ordered 200,000 tons and took an option on 100,000 additional, and exer-

cised the option in part. The Chicago, Milwaukee, St. Paul & Pacific and the Burlington are actively engaged in preparing 1929 rail programs. It is said that the Santa Fe will soon be in the market for about 75,000 tons. Rail mill output remains at 50 per cent of capacity. Production of track accessories has varied little in the last 60 days and is heavier in proportion to rail shipments than is normally expected at this time of the year. Miscellaneous orders for iron tie plates total 300 tons. Inquiries are in the market for 1000 tons.

Prices f.o.b. mill, per gross ton: Standard-section open-hearth and Bess. rails, $43; light rails, rolled from billets, $36. *Per lb.:* Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.15c.; angle bars, 2.75c.

Reinforcing Bars.—Inquiry and awards are active. Two weeks ago this market had all the appearances of having passed into a fall slump. Since that time, however, contracts have been more than heavy enough to support shop operations, and the volume of fresh inquiry is making the near future appear much brighter. Then, too, there is greater activity among architects and engineers, and estimators have more work at hand than in a number of weeks. The total volume of bars sold so far this year, both in Chicago and in the country as a whole, exceeds by a comfortable margin purchases in the first nine months of 1927. But in all directions, as in Chicago, prices are sagging and dealers do not appear to be able to strengthen their position at this time when mills are asking higher prices for fourth quarter contracts. The lightening of bar deliveries by producers is causing some inconvenience at bending shops. New contracts and recent inquiries are given on page 925.

Old Material.—The Chicago scrap market continues to gain strength, and quotations for the most part are higher than a week ago. Users are resisting price advances and therefore have not built stocks. With the high rate of activity, they are forced to come into the market at frequent intervals. This policy makes for urgent calls for prompt delivery, which is becoming increasingly difficult because many cars that have been used in the scrap trade are being diverted to the coal fields. More than 15,000 tons of heavy melting steel has been purchased by a local steel mill at $14.50 a gross ton, delivered. Prices paid to railroads are high. The Chicago & North Western received the equivalent of $14.75 a gross ton, delivered, for heavy melting steel.

Prices deliv'd Chicago district consumers:

Per Gross Ton

Basic Open-Hearth Grades:	
Heavy melting steel	$14.00 to $14.50
Shoveling steel	13.75 to 14.25
Frogs, switches and guards, cut apart, and misc. rails	15.50 to 16.00
Hydraul. compressed sheets	12.50 to 13.00
Drop forge flashings	9.50 to 10.00
Forg'd, cast and r'l'd steel carwheels	17.25 to 17.75
Railr'd tires, charg. box size	17.25 to 17.75
Railr'd leaf spring cut apart	17.25 to 17.75
Acid Open-Hearth Grades:	
Steel couplers and knuckles	15.75 to 16.25
Coil springs	18.25 to 18.75
Electric Furnace Grades:	
Axle turnings	13.50 to 14.00
Low phos. punchings	15.50 to 16.00
Low phos. plate, 12 in. and under	15.50 to 16.00
Blast Furnace Grades:	
Axle turnings	11.00 to 11.50
Cast iron borings	10.50 to 11.00
Short shoveling turnings	10.50 to 11.00
Machine shop turnings	6.75 to 7.25
Rolling Mill Grades:	
Iron rails	14.75 to 15.25
Rerolling rails	16.50 to 17.00
Cupola Grades:	
Steel rails less than 3 ft.	17.25 to 17.75
Angle bars, steel	16.50 to 17.00
Cast iron carwheels	13.75 to 14.00
Malleable Grades:	
Railroad	15.25 to 15.75
Agricultural	12.50 to 13.00
Miscellaneous:	
*Relaying rails, 56 to 60 lb.	23.00 to 25.00
*Relaying rails, 65 lb. and heav.	26.00 to 31.00

Per Net Ton

Rolling Mill Grades:	
Iron angles and splice bars	14.50 to 15.00
Iron arch bars and transoms	20.50 to 21.00
Iron car axles	25.50 to 26.00
Steel car axles	16.25 to 16.75
No. 1 railroad wrought	12.75 to 13.25
No. 2 railroad wrought	12.50 to 13.00
No. 1 busheling	10.25 to 10.75
No. 2 busheling	6.00 to 6.50
Locomotive tires, smooth	13.00 to 13.50
Pipes and flues	9.00 to 9.50
Cupola Grades:	
No. 1 machinery cast	15.50 to 16.00
No. 1 railroad cast	14.50 to 15.00
No. 1 agricultural cast	13.75 to 14.25
Stove plate	11.50 to 12.00
Grate bars	12.25 to 12.75
Brake shoes	11.50 to 12.00

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

Wire Products.—Producers of wire products frankly admit that the fall jobbing trade is a disappointment. Some fair-sized contracts have been placed by distributers, but specifications are not in keeping with what had been expected. Jobbers are finding only a small outlet for nails, this being equally true in the country and in the cities. Nail output is not over 25 per cent of capacity. Woven wire fencing is moving slowly, not having gained a volume that sellers believed should come with generally good conditions in agricultural districts. A bright spot in this market is the consistent and heavy demand from the manufacturing trade. Contract buyers are well covered for this quarter, and spot buying is of sizable proportions. Prices are steady. Mill stocks are no longer growing and output at 65 per cent of capacity closely represents the actual consumption of wire and wire products.

Cast Iron Pipe.—This market is unusually quiet. Chicago will buy 200 tons of 3-in. to 24-in. fittings. Producers are naming $36 to $37, Birmingham, for 6-in. and larger diameter pipe, but tests have not been afforded here.

Prices per net ton, deliv'd Chicago: Water pipe, 6-in. and over, $42.20 to $43.20; 4-in., $46.20 to $47.20; Class A and gas pipe, $4 extra.

Sheets.—Volume of sales is up and prices are strong. Specifications are liberal. Output is steady at 85 per cent of hot-mill capacity. New purchases now being made are for the most part for delivery in November and December. Releases by road machinery builders are heavier, and agricultural machinery manufacturers are planning larger schedules for early winter manufacture. Movement of sheets out of warehouses is growing slowly. Mill deliveries of all grades range from three to four weeks.

Base prices per lb., deliv'd from mill in Chicago: No. 24 black sheets, 2.80c. to 2.90c.; No. 24 galv., 3.65c. to 3.75c.; No. 10 blue ann'l'd, 2.15c. to 2.25c. Deliv'd prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

Coke.—Two new batteries, each of 37 coke ovens, have been lighted at the Iroquois furnaces. The daily capacity of these new units is 1100 tons. Shipments of by-product foundry coke are heavy and prices are firm.

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes	3.10c.
Soft steel bars	3.00c.
Reinforc'g bars, billet steel	2.15c. to 2.50c.
Reinforc'g bars, rail steel	2.00c. to 2.50c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Bands	3.65c.
Hoops	4.15c.
Black sheets (No. 24)	3.80c.
Galv. sheets (No. 24)	4.65c.
Blue ann'l'd sheets (No. 10)	3.35c.
Spikes, stand. railroad	3.55c.
Track bolts	4.55c.
Rivets, structural	3.60c.
Rivets, boiler	3.60c.
	Per Cent Off List
Machine bolts	60
Carriage bolts	60
Coach or lag screws	60
Hot-pressed nuts, sq., tap. or blank	60
Hot-pressed nuts, hex., tap. or blank	60
No. 8 black ann'l'd wire, per 100 lb.	$3.30
Com. wire nails, base per keg	3.10
Cement c't'd nails, base per keg	3.10

Large Airship Hangar to Be Built at Akron

An airship hangar, which, it is stated, will be the largest in the world, will be erected by the Goodyear-Zeppelin Corporation, Akron, Ohio, a subsidiary of the Goodyear Tire & Rubber Co. Two dirigibles for which the Navy Department has awarded the Akron company a contract will be built in this hangar, and it is stated that the plant will also be used for the erection of commercial airships. The hangar will be 1200 ft. long, 360 ft. wide and 200 ft. high, and its cost is estimated at from $2,000,000 to $3,000,000. It will be large enough to hold at one time two airships of the size that will be built for the Navy. Equipment will be installed for fabricating the frames for the dirigibles. While the location of the plant has not been definitely announced, a site will probably be selected in Akron.

Philadelphia

Pennsylvania Asks for Annual Rail Tonnage — Steel Contracting Fairly Heavy—Basic Iron Inquired For

PHILADELPHIA, Oct. 9.—Bids will be opened Oct. 15 on the rail requirements of the Pennsylvania Railroad for next year, 160,000 tons, with an option on 70 per cent more. In 1927, about 200,000 tons was bought, with an option on 50 per cent additional, but only half of the latter was taken up during the year.

Steel contracting has been larger than in any previous quarter of the year, and most mills report September as among the record months. Sheet mills are well filled and bar mills have in some cases closed rolling schedules to the end of this month. Prices are firm. Last quarter contracts are still being made for bars and plates at a $2 a ton advance to the consumer, or at 1.90c. to 2c., Pittsburgh, on bars and 2.05c. to 2.15c., Coatesville, on plates.

Pig Iron.—A large consumer of basic, which recently closed on a sizable tonnage for last quarter delivery, is in the market for more iron and will probably buy this week. Sellers are of the opinion that the purchase price will establish an advance in the basic market of about 50c. a ton. Foundry iron is inactive, but prices are firm at $20, base furnace. Consumers are pressing for prompt shipments on their contracts and interest in first quarter requirements is developing, although no definite inquiries are reported. Low phosphorus demand is fair and the price is unchanged.

Prices per gross ton at Philadelphia:

East. Pa. No. 2, 1.75 to 2.25 sil.	$20.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.26
East. Pa. No. 1X	21.76
Basic (del'd east. Pa.)	$19.00 to 19.25
Gray forge	19.75 to 20.25
Malleable	21.00 to 21.50
Stand. low phos. (f.o.b. N. Y. State furnace)	22.00 to 23.00
Cop. b'r'g low phos. (f.o.b. furnace)	23.00 to 23.50
Va. No. 2 plain, 1.75 to 2.25 sil.	24.54
Va. No. 2X, 2.25 to 2.75 sil.	25.04

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to $1.64 from eastern Pennsylvania furnaces; $4.54 from Virginia furnaces.

Bars.—Mills are heavily booked and deliveries have lengthened to two to three weeks on some sizes to five and six weeks on others. Contracts are still being made for this quarter at 1.90c. to 1.95c., Pittsburgh, or 2.22c. to 2.27c., Philadelphia. On small lots 2c., Pittsburgh, or 2.32c., Philadelphia, is usually obtained.

Shapes.—Fabricating shops are well engaged and are quoting on a sizable tonnage of new projects, including 16,000 to 18,000 tons for the Reading Commercial Building at Broad and Callowhill Streets. Low priced contracts on shapes have been fairly well completed, and mills are now asking a minimum of 2.05c., Pencoyd, or 2.11c., Philadelphia, on new business. Contracting has been in fair volume, but not so large as in plates and bars.

Plates.—Contracting has been large, and prices are firm at 2.05c. to 2.15c. per lb., Coatesville, or 2.15c. to 2.25c., delivered Philadelphia. Deliveries on third quarter contracts continue in a few cases. Local shipyards are bidding on a number of shipbuilding contracts, but no awards are reported.

Sheets.—Specifications on mill books are sufficient in some instances to require full operation for eight to nine weeks. Blue annealed sheets are firm at 2c. to 2.10c., Pittsburgh, or 2.32c. to 2.42c., Philadelphia, although some large users claim to be able to buy the continuous mill product at 1.90c. per lb., Pittsburgh. Black sheets are 2.75c., Pittsburgh, or 3.07c., Philadelphia, and galvanized 3.50c., Pittsburgh, or 3.82c., Philadelphia. Contracting for all grades of sheets has been heavy. Most consumers are asking for prompt deliveries.

Warehouse Business.—Effective Oct. 8, jobbers have advanced plates, shapes, bars, hoops and bands $2 a ton. The quotation on blue annealed sheets has been revised from 3.15c. per lb., base, to 3c., and the quantity differential on plates, shapes, bars, hoops and bands has been applied on orders of one ton or more of a size.

Imports.—In the week ended Oct. 6, 4507 tons of pig iron and 35 tons of ferromanganese arrived at this port from the United Kingdom. Ore imports were 1000 tons of chrome ore from India. Steel arrivals were as follows: From France, 1010 tons of iron skelp, 112 tons of structural shapes, 12 tons of strip steel and 242 tons of steel billets; from Germany, 24 tons of steel scrap and 26 tons of steel sheets; from the United Kingdom, 15 tons of strip steel; from Sweden, 27 tons of steel billets and 31 tons of steel bars, and from Belgium, 12 tons of steel bars and 369 tons of shapes.

Old Material.—A good tonnage of scrap is moving to eastern Pennsylvania consumers, but no new buying of consequence is reported. A broker, as buying agent for a Phoenixville consumer, is paying $11.50 per ton, delivered, for machine shop turnings. A leading steel company may resort to duplexing operations to save scrap, which the company considers too high at the present level. The list of scrap offered last week by the Pennsylvania Railroad is understood to have brought out a bid of $17.70 per ton, delivered Vandergrift, Pa., for the heavy melting steel.

Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel	$16.00
Scrap T rails	$15.50 to 16.00
No. 2 heavy melting steel	13.00 to 13.50
No. 1 railroad wrought	15.50 to 16.00
Bundled sheets (for steel works)	11.00 to 11.50
Machine shop turnings (for steel works)	11.50
Heavy axle turnings (or equiv.)	12.50 to 13.50
Cast borings (for steel works and roll. mill)	11.00 to 11.50
Heavy breakable cast (for steel works)	16.50 to 17.00
Railroad grate bars	12.50 to 13.00
Stove plate (for steel works)	12.50 to 13.00
No. 1 low phos., hvy., 0.04% and under	19.00 to 20.00
Couplers and knuckles	17.00 to 17.50
Rolled steel wheels	17.00 to 17.50
No. 1 blast f'nace scrap	10.00 to 10.50
Wrot. iron and soft steel pipes and tubes (new specific.)	14.50 to 15.00
Shafting	19.00 to 20.00
Steel axles	22.00 to 23.00
No. 1 forge fire	12.00 to 12.50
Cast iron carwheels	16.50 to 17.00
No. 1 cast	17.00 to 17.50
Cast borings (for chem. plant)	14.50 to 15.00
Steel rails for rolling	15.50 to 16.00

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, ¼-in. and heavier	2.70c.
Plates, ⅜-in.	2.90c.
Structural shapes	2.70c.
Soft steel bars, small shapes, iron bars (except bands)	2.70c.
Round-edge iron	3.50c.
Round-edge steel, iron finished 1½ x 1½ in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforc. steel bars, sq. twisted and deform.	2.60c. to 2.80c.
Cold-fin. steel, rounds and hex.	3.45c.
Cold-fin. steel, sq. and flats	3.95c.
Steel hoops	3.60c.
Steel bands, No. 12 to ⅜-in., inclus.	3.35c.
Spring steel	5.00c.
*Black sheets (No. 24)	3.85c.
†Galvanized sheets (No. 24)	4.60c.
Blue ann'l'd sheets (No. 10)	3.00c.
Diam. pat. floor plates—	
¼-in.	5.30c.
⅜-in.	5.50c.
Rails	3.20c.
Swedish iron bars	6.60c.

*For 50 bundles or more; 10 to 49 bun., 4.10c. base; 1 to 9 bun., 4.35c. base.
†For 50 bundles or more; 10 to 49 bun., 4.95c. base; 1 to 9 bun., 5.30c. base.

Dover Furnace Remains in Hanna Control

An impression that the Dover furnace, Dover, Ohio, of the Hanna Furnace Co., Cleveland, was under lease to the Shenango Furnace Co., Pittsburgh, is corrected in an announcement just made by the Hanna company, to the effect that the furnace again is in its control. This furnace furnished hot metal to the Penn Mold & Mfg. Co., and when that company was acquired by the Shenango company there were reports that the furnace had been leased as part of the transaction. Early plans called for the operation of the Dover ingot mold plant and a lease of the blast furnace was drawn up, but it was not executed, as the Shenango company soon decided to concentrate the manufacture of molds at its own plant at Filler for Foreign Markets Sharpsville, Pa.

The Hanna Furnace Co. is installing a Steinbart washer at its No. 4 Susquehanna furnace, Buffalo. This is the third installation in this group of furnaces of this type washer, which is built by the Riter-Conley Co., Pittsburgh.

New York

Pig Iron Market Stronger—Steel Sales Reflect Firmness of Fourth Quarter Prices

NEW YORK, Oct. 8.—The pig iron market has a strong tone. Despite the liberal contracting for this quarter, a good volume of new business, mainly in relatively small lots for early shipment, develops from week to week. Sales in the past seven days totaled nearly 10,000 tons. In some instances slow deliveries against previous orders have resulted in the payment of premiums for prompt material. Barge shipments from Buffalo, however, have increased sharply, and on most current business the ruling price on foundry iron is $17, base Buffalo. Delivered prices at New Jersey tidewater points have stiffened, evidently reflecting higher barge rates. The present market range is $20.01 to $21.25, delivered, for No. 2 plain, which is an advance of 50c. a ton in the minimum price over quotations recently current and an increase of $1 a ton over the mid-summer low on barge iron. Little interest has yet been shown in first quarter pig iron, and producers, looking for further increases in prices, are not pressing for contracts even at the recently announced advance of 50c. a ton on Buffalo material. Prices on foreign iron are again competitive with those on the domestic product. Dutch No. 1X foundry is still offered at $21, duty paid, port of entry, although $21.25 will be asked on first quarter business. An advance of about $1.25 a ton in ocean freight rates on pig iron from India, effective Jan. 1, will not affect deliveries from that country before March. The largest current inquiry is for 500 tons wanted by the American Locomotive Co. for its Dunkirk, N. Y., plant.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75 to 2.25	$21.91
*Buf. No. 2, del'd east. N. J.	20.28
No. 2, del'd east. N. J. tidewater	$20.01 to 21.25
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	20.89 to 22.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	21.39 to 22.52
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	21.89 to 23.02

Freight rates: $4.91 from Buffalo, $1.39 to $2.52 from eastern Pennsylvania.

*Price delivered to New Jersey cities having rate of $3.28 a ton from Buffalo.

Plates, Shapes and Bars.—Considering the heavy specifications received by mills in the latter part of September, the volume of business so far this month, though at a lessened rate, is surprisingly good. This applies particularly to bars, but plates and shapes are also in steady demand. In bars and shapes, mill schedules are well rounded out, with the result that early deliveries are not easy to get unless a buyer happens to catch a current rolling of a size wanted. The price situation for the quarter is now well defined. Large buyers of bars have been covered at 1.90c., Pittsburgh, while the intermediate class of consumers and jobbers are paying 1.95c. The number of contracts at the latter figure is large. Only the smallest buyers are being asked to pay 2c., but single carloads have been sold at this price.

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.30c.
Soft steel bars, small shapes	3.25c.
Iron bars	3.24c.
Iron bars, Swed. charcoal	7.00c. to 7.25c.
Cold-fin. shafting and screw stock—	
Rounds and hexagons	3.50c.
Flats and squares	4.00c.
Cold-roll. strip, soft and quarter hard	5.15c. to 5.40c.
Hoops	4.50c.
Bands	4.00c.
Blue ann'l'd sheets (No. 10)	3.85c. to 3.90c.
Long terne sheets (No. 24)	5.60c. to 5.80c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galv. annealed	5.15c.
Tire steel, 1½ x ½ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. to 7.00c.

	Per Cent Off List
Machine bolts, cut thread:	
¾ x 6 in. and smaller	60
1 x 30 in. and smaller	50 to 50 and 10
Carriage bolts, cut thread:	
½ x 6 in. and smaller	60
¾ x 20 in. and smaller	50 to 50 and 10
Coach screws:	
½ x 6 in. and smaller	60
1 x 16 in. and smaller	50 to 50 and 10

	Per 100 Ft.
Boiler Tubes—	
Lap welded, 2-in.	$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

Discount on Welded Pipe

Standard Steel—	Black	Galv.
⅛-in. butt	46	29
¼-in. butt	51	37
1-3-in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap	37	12
Wrought Iron—		
⅛-in. butt	5	+19
¼-in. butt	11	+ 9
1-1½-in. butt	14	+ 6
2-in. lap	5	+14
3-6-in. lap	11	+ 6
7-12-in. lap	3	+16

Tin Plate (14 *x* 20 *in.*)

	Prime	Seconds
Coke, 100 lb. base box	$6.45	$6.20
Charcoal, per Box—	A	AAA
IC	$9.70	$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 *x* 20 *in.*)

IC—20-lb. coating	$10.00 to $11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass

	Per Lb.
Nos. 18 to 20	3.60c. to 3.80c.
No. 22	3.75c. to 3.95c.
No. 24	3.80c. to 4.00c.
No. 26	3.90c. to 4.10c.
No. 28*	4.05c. to 4.25c.
No. 30	4.30c. to 4.50c.

Sheets, Galvanized

	Per Lb.
No. 14	4.15c. to 4.35c.
No. 16	4.00c. to 4.20c.
No. 18	4.15c. to 4.35c.
No. 20	4.30c. to 4.50c.
No. 22	4.35c. to 4.55c.
No. 24	4.50c. to 4.70c.
No. 26	4.75c. to 4.95c.
No. 28*	5.00c. to 5.20c.
No. 30	5.40c. to 5.60c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

The larger users of plates and shapes have been covered at 2.22½c., New York, for plates and at 2.19½c., New York, for shapes, with $1 higher for the intermediate class of buyers and $2 up, or 2.32½c., for small lots. On 150 tons of plates, a buyer had two quotations of 2.22½c. and some at 2.27½c., New York. Structural steel business in New York promises to continue at a brisk rate. The inquiry is out for 26,500 tons for the Kill van Kull bridge connecting Staten Island to New Jersey, and bids will be taken up to Oct. 16 on 6700 tons for another section of the New York subway system. Lettings included 3400 tons for a Y. M. C. A. building and 2800 tons for a Salvation Army building. The Structural Steel Board of Trade of New York reports total bookings by its members in September of 39,000 tons, exclusive of subways and similar work, compared with 43,000 tons in August and 26,000 tons in September, 1927.

Mill prices per lb., deliv'd New York: Soft steel bars, 2.24c. to 2.34c.; plates, 2.22½c. to 2.32½c.; struc. shapes, 2.19½c. to 2.22½c.; bar iron, 2.14c.

Sheets.—Fourth quarter contracting for sheets has been much more liberal than was expected, in view of the large specifications received by the mills last month. Spot sales and contract coverage have been at 2.75c., Pittsburgh, for black, 3.50c. for galvanized and 2c. for blue annealed in widths under 45 in. and at 2.10c. for widths exceeding 45 in.

Reinforcing Steel.—A considerable tonnage is involved in jobs placed the past week, the largest having been a building for Montgomery Ward & Co. at Albany, N. Y., which took 2000 tons, and foundation work on the Kill van Kull bridge, amounting to 500 tons. The general contract for all four sections of the water tunnel extending under Manhattan from Yonkers to Brooklyn has been let to Patrick McGovern, Inc. The job will take 2850 tons of bars. A terminal warehouse for the Delaware, Lackawanna & Western Railroad Co. at Jersey City will require 2000 tons. Business placed has not yet provided a test for the $2 advance in prices which was made effective Oct. 1.

Warehouse Business.—Jobbers report increased activity among small consumers, and in a few instances large users are buying material from warehouse, probably because of the extended mill deliveries. Demand for structural steel is good, and orders are increasing in size.

Cast Iron Pipe. — Northern and Southern makers of pressure pipe report a steady flow of small orders ranging from a few tons to a carload, but no sizable business is in the market. Prices continue at $36 and $37 base, Birmingham, the quotation of Southern foundries, and $35.60 to $36.60 per net ton, delivered New York, quoted by Northern makers.

Prices per net ton, deliv'd New York: Water pipe, 6-in. and larger, $35.60 to $36.60; 4-in. and 5-in., $40.60 to $41.60; 3-in., $50.60 to $51.60; Class A and gas pipe, $4 to $5 extra.

Coke.—Connellsville quotations on standard furnace coke range from $2.85 to $3 per ton and slight advances on these prices are usually asked when delivery over the remainder of the year is specified. This firmness is not reflected in the foundry coke market, however, and standard foundry continues at $3.50 to $3.75 per net ton, Connellsville. Standard brands are unchanged at $4.85 per net ton, ovens, or $8.56 per ton, delivered to northern New Jersey, Jersey City and Newark and $9.44 per ton, to New York and Brooklyn. By-product coke operators are heavily booked with contract tonnage, and deliveries are in some cases delayed. Foundry grade is unchanged at $9 to $9.40, Newark or Jersey City, and $10.06, New York or Brooklyn.

Old Material.—Buying prices show an advance on most grades of scrap. No. 1 heavy melting steel is being bought by brokers at $15.50 per ton, delivered to a consumer at Coatesville, Pa., and some brokers are paying $15.75 per ton, delivered Claymont, Del., to fill a $16 order. The heavy melting steel on the Pennsylvania Railroad list, opened last week, is reported to have brought $17.85 per gross ton, delivered Steubenville, Ohio, and $17.70 per ton, Vandergrift, Pa. Forge fire shows a decided advance in price, with brokers paying $12 and a few paying $12.50 per ton, delivered eastern Pennsylvania, to cover a recent $12.50 per ton order. Yard grade of heavy melting steel is being bought at $12.50 to $13 per ton, delivered, shipments going to consumers at Harrisburg, Phoenixville, Pottsville and Conshohocken, Pa.

Dealers' buying prices per gross ton, f.o.b. New York:

No. 1 heavy melting steel	$11.50 to $12.00
Heavy melting steel (yard)	8.75 to 9.50
No. 1 hvy. breakable cast.	12.75 to 13.50
Stove plate (steel works).	8.75 to 9.00
Locomotive grate bars....	9.25 to 10.25
Machine shop turnings....	7.50 to 8.00
Short shoveling turnings..	7.50 to 8.00
Cast borings (blast furn. or steel works).....	6.50 to 7.50
Mixed borings and turnings	6.75 to 7.25
Steel car axles.....	18.00 to 18.50
Iron car axles.....	25.25 to 26.25
Iron and steel pipe (1 in. dia., not under 2 ft. long)	10.75
Forge fire.....	8.25 to 9.00
No. 1 railroad wrought...	11.75 to 12.25
No. 1 yard wrot., long....	10.75 to 11.25
Rails for rolling.....	11.50 to 12.00
Cast iron carwheels.....	13.00 to 13.50
Stove plate (foundry)....	9.50 to 10.00
Malleable cast (railroad).	10.00
Cast borings (chemical)..	11.25

Prices per gross ton, deliv'd local foundries:

No. 1 machy. cast.....	$16.50 to $17.00
No. 1 hvy. cast (columns, bldg. materials, etc.) cupola size.....	14.50 to 15.00
No. 2 cast (radiators, cast boilers, etc.).....	14.00 to 14.50

Cleveland

Steel Business This Month Exceeding Expectations in View of Recent Heavy Buying

CLEVELAND, Oct. 9.—A good volume of orders for steel bars and structural shapes came out during the week at the new prices. Business exceeded expectations, in view of the heavy volume of specifications on expiring contracts up to the end of September. Plates also are moving fairly well. The fact that no lull developed early this month while shipments on old contracts were being used up indicates that steel is going into production and that consumers are not accumulating stocks. Consumers are accepting the new prices on steel bars, plates and structural material, and most of the buyers have signed fourth quarter contracts.

Most contracts taken by outside mills are at 1.95c., Pittsburgh, for steel bars, plates and shapes. A very few of the larger buyers are allowed the 1.90c. price, but buyers of small miscellaneous lots are paying 2c. The outside mill price on steel bars, when Cleveland is used as a basing point, is 1.95c. to 2.05c., Cleveland. The local steel bar market shows a firmer tone, with 1.90c., Cleveland, the commonly quoted price.

Some of the automobile companies are continuing their efforts to place sheets and strip steel for the first quarter, but mills are declining to go beyond the end of the year. While the automotive industry is not operating at the rate of a month ago, specifications from that industry are good, and it is expected that the output of motor cars during the last quarter will exceed those of the like period in the past few years.

To simplify the price situation and stabilize the market on hot-rolled strip, makers have issued a new card of extras naming one base price for all widths of material and covering strip up to 24-in. While it is expected that this card will be generally adopted, the new extras will not generally apply before January, as most consumers are under contract for the remainder of the year at the old prices.

Structural inquiry is coming out in fair volume, and fabricators are quoting higher prices than during the last quarter. The Cleveland Union Terminals Co. is expected to have an inquiry out shortly for 20,000 tons of structural material for bridge work in connection with new tracks.

Pig Iron.—Foundry and malleable iron has been sold for first quarter shipment from Toledo and Detroit to central and western Ohio and Michigan at the ruling fourth quarter quotations. Cleveland furnaces have not opened their books for that period and are adhering to their quotations of $17.50 for foundry and malleable iron for outside shipment for the remainder of the year. An $18 price will probably be named for the first quarter in Indiana, although no sales are reported in that State. Sales by Cleveland interests during the week totaled 32,000 tons, largely in last quarter business. A Muncie, Ind., malleable foundry is inquiring for 6000 tons for the first quarter, a Dayton, Ohio, foundry for 2000 tons of foundry iron and a Hamilton, Ohio, foundry for 1500 tons of foundry iron. The shortage of basic iron continues and the market is firm at $17. A Canton, Ohio, consumer which inquired for 15,000 tons has taken care of its immediate needs by the purchase of about 4000 tons at $17, Valley, and another Ohio consumer has bought a small tonnage from a Lake furnace at a price that figures slightly above $17. An attempt was made to increase the production of basic iron by shipping basic ore to a furnace having only foundry ore, but the plan was abandoned.

Prices per gross ton at Cleveland:

N'tn'n fdy., sil. 1.75 to 2.25	$18.50
S'th'n fdy., sil. 1.75 to 2.25	22.25
Malleable	18.50
Ohio silvery, 8 per cent...	28.00
Basic Valley furnace.....	17.00
Stand. low phos., V'ley fur.	$26.50 to 27.00

Prices, except on basic and low phosphorus, are delivered Cleveland. Freight rates: 50c. from local furnaces; $3 from Jackson, Ohio; $6 from Birmingham.

Sheets.—Business is coming out in good volume at the new prices, which appear to be firmly maintained at 2.75c., Pittsburgh, for black, 2c. for blue annealed and 3.50c. for galvanized. Little is heard now of an Ohio mill base, which became quite general when the market was weak. Mills are getting a good volume of orders, but consumers see no advantage in placing fourth quarter contracts, and, as a rule, are buying only for their early requirements. Mills are well filled and some are turning away business, particularly in auto body sheets, because they cannot make the desired deliveries. A large tonnage of auto body sheets will be purchased shortly for the new Chevrolet models.

Warehouse Business.—While some price shading is reported on galvanized and black sheets, these are holding fairly well at the recent $2 a ton advance. Business shows an improvement in that orders, while not more numerous, are for larger tonnages than recently.

Semi-Finished Steel.—Prices appear to have been definitely established at $33, Pittsburgh and Youngstown, for

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and struct. shapes.....	3.00c.
Soft steel bars.....	3.00c.
Reinforc. steel bars.....	2.25c. to 2.50c.
Cold-fin. rounds and hex.....	3.65c.
Cold-fin. flats and sq.....	4.15c.
Hoops and bands.....	3.65c.
Cold-finished strip.....	*5.95c.
Black sheets (No. 24).....	3.50c.
Galvanized sheets (No. 24).....	4.25c.
Blue ann'l'd sheets (No. 10).....	3.35c.
No. 9 ann'l'd wire, per 100 lb.....	$2.85
No. 9 gal. wire, per 100 lb.....	3.30
Com. wire nails, base per keg.....	2.85

*Net base, including boxing and cutting to length.

sheet bars, large billets and slabs for the last quarter, and a Cleveland mill announces that it closed during the week with most of its consumers on that basis. This was the open quotation in this market during the last quarter, although some consumers were able to get a $32 price. Some effort has been made recently to get the price on large billets and slabs up to $34.

Cold-Finished Steel Bars.—Most consumers have accepted the $2 a ton advance to 2.25c., Cleveland, for the fourth quarter. There is somewhat of a lull in the demand following heavy specifications against expiring third quarter contracts.

Cold-Rolled Strip.—The demand has increased considerably, due to orders from the automotive industry for material for new models. The market is firm at regular quotations.

Reinforcing Bars.—Business shows a gain, and prices are somewhat better, although irregularities have not disappeared. Awards during the week included two local jobs totaling nearly 1000 tons.

Iron Ore.—The demand for small lots of ore to round out mixtures is more active than usual at this time of the year. One of 40,000 tons and several smaller lots were sold during the week. The market is firm at regular prices.

Fluorspar.—Some of the mills having contracts for minimum and maximum quantities have increased their specifications. There is very little current business, but the market is firm at $17, mines, for gravel fluorspar.

Bolts and Nuts.—The demand is slightly less than last month, owing in part at least to some slowing down in orders from the automotive industry. Most buyers have placed fourth quarter contracts at the regular discounts.

Coke.—A moderate amount of activity is reported in foundry coke for prompt shipment. The ruling price for good Connellsville coke is $4, ovens. Ohio by-product coke is quoted at $7.75, Painesville.

Hot-Rolled Strip Steel.—A new card of extras on hot-rolled strip was issued by some of the mills Oct. 6, and it is expected that the new extras will be generally adopted. The new card has one base price for all hot-rolled strip from 1½-in. to 24-in. wide, extras being provided to cover all widths and gages. An attempt is being made in this price card to simplify the price structure on hot-rolled strip, to bring about a standard basis of quoting, and to stabilize prices. The market in these respects has been in a demoralized situation for some time. The new base prices are 2c., Pittsburgh, and 2.10c., Chicago, but for the present, at least, mills will quote a $2 a ton lower price or a 1.90c., Pittsburgh base, except possibly for small lots. Under the new card there is no gage or width of material that carries the base price, the smallest differential being 5c. per 100 lb. on the heaviest gage wide material. Prices under the new card on most sizes will be higher than present quotations. The most important changes are made on wide sizes. These formerly carried large extras which were entirely out of line, considering the present day costs of rolling the wide material compared with narrow strip. For example, No. 16 gage strip, 15-in. wide, under the old card carried a $1.15 differential, while under the new card the differential is only 30c. Carbon, quantity and cutting extras are unchanged.

Old Material.—Prices continue to move upward and the market is firm at the new levels. With an active demand for scrap for shipment to the Youngstown and Pittsburgh districts, most of the steel making grades advanced 50c. a ton during the week. Dealers are paying $16 for No. 1 heavy melting steel and for compressed sheet steel for Youngstown shipment and $17 for the former for Weirton. No. 1 heavy melting steel has been sold for delivery to a local mill at $14.25 and the supply is not plentiful at that price. One Cleveland mill would buy scrap at present, but is unwilling to pay the dealers' asking price of $15 to $15.50 for heavy melting steel. It is stated that the only Detroit scrap coming to Cleveland by water at present is some purchased a few months ago, when prices were considerably lower.

Prices per gross ton delivered consumers' yards:

Basic Open-Hearth Grades	
No. 1 heavy melting steel	$14.00 to $14.50
No. 2 heavy melting steel	13.25 to 13.50
Compressed sheet steel	13.50 to 14.00
Light bundled sheet stamp'gs	11.50 to 11.75
Drop forge flashings	12.25 to 12.75
Machine shop turnings	9.00 to 9.50
No. 1 railroad wrought	12.50 to 12.75
No. 2 railroad wrought	14.00 to 14.50
No. 1 busheling	11.50 to 12.00
Pipes and flues	9.00 to 9.50
Steel axle turnings	12.50 to 13.00
Acid Open-Hearth Grades	
Low phos. forging crops	16.00 to 16.50
Low phos., billet, bloom and slab crops	17.00 to 17.50
Low phos. sheet bar crops	16.50 to 17.00
Low phos. plate scrap	15.50 to 16.00
Blast Furnace Grades	
Cast iron borings	10.25 to 10.50
Mixed bor'gs and short turn'gs	10.25 to 10.50
No. 2 busheling	10.25 to 10.50
Cupola Grades	
No. 1 cast	16.50 to 17.00
Railroad grate bars	11.00 to 12.00
Stove plate	12.00 to 12.50
Rails under 3 ft	16.75 to 17.25
Miscellaneous	
Railroad malleable	16.00 to 16.50
Rails for rolling	16.25 to 16.50

Reinforcing Steel

Awards of 9400 Tons—2000 Tons for Mail Order Warehouse

AWARDS of reinforcing bars reported to THE IRON AGE in the last week amounted to more than 9400 tons and included 2000 tons for a mail order company warehouse at Albany, N. Y., and 1000 tons for miscellaneous work in Chicago. New projects totaled only 3400 tons, 2000 tons of which will be required for a railroad terminal warehouse at Jersey City. Awards follow:

NEW YORK, 500 tons, foundation work for Kill Van Kull bridge; from Converse Construction Co., general contractor, to Jones & Laughlin Steel Corporation.

BROOKLYN, 300 tons, soap factory for I. Rokeach & Sons, to Jones & Laughlin Steel Corporation.

NEW YORK, 100 tons, Brearley School, Inc., in East Eighty-third Street, to Jones & Laughlin Steel Corporation.

ALBANY, N. Y., 2000 tons, building for Montgomery Ward & Co., to Kalman Steel Co.

AUBURN, N. Y., 300 tons, addition to Auburn Prison, to a Buffalo maker.

LANSING, MICH., 500 tons, Logan Street viaduct, to Capitol Steel Corporation.

AKRON, OHIO, 150 tons, building for Goodyear Tire & Rubber Co., to Pattison-Leitch Co.

CLEVELAND, 500 tons, warehouse for Northern Ohio Products Co., to Bourne-Fuller Co.

CLEVELAND, 450 tons, W. S. Tyler Co., to Bourne-Fuller Co.

ALCORN, MISS., 100 tons, administration building and girls' dormitory for Agricultural and Mechanical College, to Laclede Steel Co.

CHICAGO, 100 tons of rail steel bars, apartment building at 2816 East Seventy-sixth Street, to Barton Spiderweb Co., Inc.

CHICAGO, 1000 tons, miscellaneous work placed by William G. McNulty & Brothers, contractors, to unnamed bidders.

CHICAGO, 250 tons of rail steel bars, apartment hotel, to Inland Steel Co.

CHICAGO, 100 tons, placed by Gamm Construction Co. with Concrete Engineering Co.

STATE OF ILLINOIS, 150 tons of rail steel bars, road work, to Calumet Steel Co.

FORT LEWIS, WASH., 550 tons, Government buildings, to Pacific Coast Co.

LOS ANGELES, 225 tons, apartment building at Second and Alexandria Streets, to unnamed interest.

SAN FRANCISCO, 100 tons, warehouse, Third and Brannan Streets, to Gunn, Carle Co.

SAN FRANCISCO, 900 tons, office building, 450 Sutter Street, to Gunn, Carle Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

EASTHAMPTON, MASS., 275 tons, State bridge.

CAMBRIDGE, MASS., 100 tons, engine testing unit for Massachusetts Institute of Technology.

NEW YORK, 2850 tons, tunnel for New York Board of Water Supply; Patrick McGovern, Inc., general contractor.

JERSEY CITY, 2000 tons, terminal warehouse for Delaware, Lackawanna & Western Railroad.

CLEVELAND, 150 tons, addition to Cleveland Clinic.

MINNEAPOLIS, 500 tons, warehouse; Wells Brothers Construction Co., Chicago, general contractors.

SACRAMENTO, CAL., 350 tons, paving in Ventura County; bids Oct. 24.

SEATTLE, 110 tons, hospital, Summit Street; bids being taken.

SEATTLE, 100 tons, Ballard Church; bids being taken.

Pacific Coast

Oil Tanks Awarded Take 1600 Tons of Plates—2100 Tons in Structural Lettings

SAN FRANCISCO, Oct. 6 (*By Air Mail*).—Important developments in the iron and steel markets on the Pacific Coast this week were lacking. Included among the inquiries were 1266 tons of cast iron pipe for Los Angeles and 1284 tons of cast iron or riveted steel pipe for Seattle.

Pig Iron.—Sales and inquiries for foundry pig iron involved relatively unimportant tonnages for prompt shipment. A slight improvement in the rate of operations among jobbing foundries is reported, but most consumers have sufficient stocks on hand to take care of present requirements. Prices remain unchanged.

Prices per gross ton at San Francisco:

*Utah basic	$25.00 to $26.00
*Utah fdy., sil. 2.75 to 3.25	25.00 to 26.00
**Indian fdy., sil. 2.75 to 3.25	24.00 to 25.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Bars.—Included among the awards of reinforcing steel bars this week were 900 tons for an office building and 100 tons for a warehouse in San Francisco, both taken by Gunn, Carle & Co. An unnamed interest was awarded 225 tons for an apartment building on Alexandria Street, Los Angeles. New inquiries include 350 tons for paving work in Ventura County, Cal., and 110 tons for a hospital in Seattle. Little, if any, improvement is noted in out-of-stock prices in the Los Angeles and San Francisco districts, 1.80c., base, continuing general.

Plates.—Featuring the plate market this week was the award made by the General Petroleum Corporation, Los Angeles, to the Western Pipe & Steel Co. for four 134,000-bbl. tanks involving 1600 tons of plates. This company originally put out an inquiry for 14 82,000-bbl. or nine 134,000-bbl. tanks. The additional five 134,000-bbl. tanks, calling for 2000 tons of material, will be awarded shortly. No action has yet been taken by the Shell Oil Co. on its inquiry for 10 80,000-bbl. tanks, requiring 3100 tons, for its Domingues refinery. Seattle will open bids on Oct. 26 for 231 tons of 24-in. riveted pipe, alternate bids to be taken on cast iron pipe. Bids will be opened next week on 1200 tons for a pipe line at Hood River, Ore.

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and struc. shapes	3.15c.
Soft steel bars	3.15c.
Small angles, ⅞-in. and over	3.15c.
Small angles, under ⅞-in.	3.55c.
Small channels and tees, ¾-in. to 2¾-in.	3.75c.
Spring steel, ¼-in. and thicker	5.00c.
Black sheets (No. 24)	5.00c.
Blue ann'l'd sheets (No. 10)	4.00c.
Galv. sheets (No. 24)	5.40c.
Struc. rivets, ½-in. and larger	5.65c.
Com. wire nails, base per keg	$3.40
Cement c't'd nails, 100-lb. keg	3.40

The East Bay Municipal Utility District, Oakland, Cal., has purchased the property and distributing main system of the East Bay Water Co. and as a result will not go ahead with its own system of mains, bids on which were opened Aug. 17 and which called for 7200 tons of 24 to 44-in. pipe. Prices range from 2.20c. to 2.25c., c.i.f.

Shapes.—Several structural projects were placed during the week, the tonnage being in excess of 2100 tons. The McClintic-Marshall Co. took 650 tons for an office building at Tucson, Ariz., and the Llewellyn Iron Works secured 275 tons for a store at Long Beach, Cal., 200 tons for an office building in Los Angeles and 130 tons for an office building in Glendale, Cal. The Sand Point, Wash., hangar, calling for 400 tons, was placed with the Western Construction Co. The largest new inquiry involves 300 tons for an apartment in Los Angeles. Plain material remains firm at 2.35c., c.i.f.

Cast Iron Pipe.—Demand for cast iron pipe continues light; only three projects are up for figures. The United States Cast Iron Pipe & Foundry Co. took 142 tons of 4 to 14-in. Class B pipe for Oxnard, Cal. S. A. Moceri was awarded the Sixth Avenue, N. W., improvement project at Seattle, calling for 282 tons of 6 to 12-in. Classes B and C pipe. Bids were opened this week on 1266 tons of 8-in. Class 350 pipe for Los Angeles and bids will be opened on Oct. 26 for 1284 tons of 24-in. Class B pipe for Seattle, alternate bids also to be taken on riveted steel pipe. Owing to the fact that the East Bay Municipal Utility District, Oakland, has purchased the property of the East Bay Water Co., the former's inquiry for 22,325 tons of 24 to 44-in. Class C pipe has been withdrawn.

Steel Pipe.—Oil country goods continue to move well in the southern part of the State. Oil well casing particularly is in demand. No large pipe line inquiries are up for figures.

St. Louis

Pig Iron Firm on Moderate Buying—September Steel Sales Very Heavy—Further Advances in Scrap

ST. LOUIS, Oct. 9.—Although sales of pig iron fell off during the week, the total having been about 5000 tons, the melt is steadily increasing. Shipments of the local maker are heavier. There is a firm tone to the market. The Granite City maker sold 4200 tons, including 1500 tons of malleable, to an Illinois jobbing foundry for shipment over the remainder of the year; 400 tons to an Iowa implement maker and 600 tons to a northern Illinois specialty maker, and the remainder in lots of a carload up to 200 tons. A leading Southern interest sold 400 tons. The stove interests report a gain in business, and there also is a heavy increase in the melt of agricultural factors, as well as among steel mills in lines other than those catering to the railroads. Specifications against contracts are heavy and urgent, and shipments of the local maker for September exceeded those for the same month in 1927 and for August.

Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.	$19.50 to $20.00
N'th'n No. 2 fdy., deliv'd St. Louis	20.16
Southern No. 2 fdy., deliv'd	20.67
Northern malleable, deliv'd	20.16
Northern basic, deliv'd	20.16

Freight rates: 81c. Granite City to St. Louis; $2.16 from Chicago; $4.42 from Birmingham.

Coke.—An advance of 25c. a ton on domestic coke for shipments outside of St. Louis has been made by local by-product interests. Buying of foundry coke is fair.

Finished Iron and Steel.—The Granite City Steel Co. booked a greater tonnage in actual specifications during last month than in any September since the war. The last half of the month was especially active and the volume of business so great that the company has found it necessary to extend deliveries on new business. All units are now running full, and from present indications should continue so for the greater part of the fourth quarter. The demand is well diversified, not only as to commodities, but with respect to industries. Prices in St. Louis, the Middle West and in the Southwest appear firm. The Missouri Pacific Railroad is inquiring for 30,000 tons of rails for 1929 requirements. Warehouse business in September was about 10 per cent less than in August, although about the same as in September, 1927. The only award for structural steel for several weeks,

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.15c.
Cold-fin. rounds, shafting, screw stock	3.75c.
Black sheets (No. 24)	4.10c.
Galv. sheets (No. 24)	4.95c.
Blue ann'l'd sheets (No. 10)	3.45c.
Black corrug. sheets (No. 24)	4.15c.
Galv. corrug. sheets	5.00c.
Structural rivets	3.75c.
Boiler rivets	3.75c.
	Per Cent Off List
Tank rivets, ⅞-in. and smaller, 100 lb. or more	65
Less than 100 lb.	60
Machine bolts	60
Carriage bolts	60
Lag screws	60
Hot-press. nuts, sq., blank or tapped, 200 lb. or more	60
Less than 200 lb.	50
Hot-press. nuts, hex., blank or tapped, 200 lb. or more	60
Less than 200 lb.	50

1800 tons for a dairy exhibition building, went to the Stupp Brothers Bridge & Iron Co.

Old Material.—Dealers continue to advance prices of old material in an effort to attract shipments to this market so that they may fill outstanding contracts and prepare for buying by consumers, who continue to hold out against higher prices, but are expected to buy soon. Stocks in the hands of dealers here are light, and they must pay higher prices to get shipments from Texas and Louisiana dealers, who have been finding a more profitable market in Europe, while Oklahoma and Kansas dealers have been getting more for their old material in Colorado. Railroad lists are bringing high prices. Heavy melting steel, heavy shoveling steel, bundled sheets, No. 2 railroad wrought, machine shop turnings, steel rails less than 3 ft., cast iron car wheels and No. 1 railroad cast are 50c. a ton higher, while miscellaneous standard section rails, rails for rolling, No. 1 railroad wrought, and stove plate are 25c. higher. Railroad lists include: Baltimore & Ohio, 9795 tons; Southern Pacific, 6500 tons; Wabash, 2740 tons; Missouri-Kansas-Texas, 1775 tons; Louisville & Nashville, 125 tons; Ann Arbor, 166 carloads; Frisco, 18 carloads; Chicago & Eastern Illinois, 13 carloads.

Dealers' buying prices, per gross ton, f.o.b. St. Louis district:

Heavy melting steel	$12.50 to $13.00
No. 1 locomotive tires	12.50 to 13.00
Heavy shoveling steel	12.50 to 13.00
Miscel. stand.-sec. rails including frogs, sw'ches and guards, cut apart	14.00 to 14.50
Railroad springs	15.00 to 15.50
Bundled sheets	9.50 to 10.00
No. 2 railroad wrought	12.50 to 13.00
No. 1 busheling	9.00 to 9.50
Cast iron borings	8.25 to 8.75
Iron rails	13.00 to 13.50
Rails for rolling	14.75 to 15.25
Machine shop turnings	9.00 to 9.50
Steel car axles	18.25 to 18.75
Iron car axles	26.50 to 27.00
Wrot. iron bars and trans.	19.25 to 19.75
No. 1 railroad wrought	11.00 to 11.50
Steel rails, less than 3 ft.	15.50 to 16.00
Steel angle bars	13.50 to 14.00
Cast iron carwheels	13.50 to 14.00
No. 1 machinery cast	14.50 to 15.00
Railroad malleable	12.50 to 13.00
No. 1 railroad cast	14.00 to 14.50
Stove plate	12.00 to 12.50
Agricult. malleable	11.50 to 12.00
Relay. rails, 60 lb. and under	20.50 to 23.50
Relay. rails, 70 lb. and over	26.50 to 29.00

Boston

Pig Iron Sales Drop—Coke and Scrap Markets Active—Structural Steel Work Lighter

BOSTON, Oct. 9.—Pig iron sales in the past week were not quite 4000 tons and included close to 1000 tons of Indian iron at $21.25 to $21.75 a ton, on dock here, duty paid, for the equivalent of No. 2 grade. Although sales have dropped, foundries are specifying freely against old contracts. Prices remain very firm. No new open inquiries of importance are reported. Current buying is very largely for mixture purposes. The New England melt of iron is increasing, although slowly, and furnace representatives are of the opinion there will be a buying movement before the close of October for filling in last quarter and for the first quarter.

Foundry iron prices per gross ton deliv'd to most New England points:

*Buffalo, sil. 1.75 to 2.25	$21.91
*Buffalo, sil. 2.25 to 2.75	$21.91 to 22.41
†Buffalo, sil. 1.75 to 2.25	20.78
†Buffalo, sil. 2.25 to 2.75	20.78 to 21.28
East. Penn., sil. 1.75 to 2.25	23.65
East. Penn., sil. 2.25 to 2.75	24.15
Va., sil. 1.75 to 2.25	25.71
Va., sil. 2.25 to 2.75	26.21
Ala., sil. 1.75 to 2.25	23.16 to 25.02
Ala., sil. 2.25 to 2.75	23.66 to 25.52

Freight rates: $4.91 all rail and $3.78 rail and water from Buffalo; $3.65 from eastern Pennsylvania; $5.21 all rail from Virginia, $6.91 to $8.77 from Alabama.
*All rail rate. †Rail and water rate.

Cast Iron Pipe.—Massachusetts has awarded 316 tons of 6, 8 and 10-in. pipe for a Waltham, Mass., hospital job to R. D. Wood & Co., Portland, Me., has closed bids on 800 tons of 6 to 12-in. pipe for delivery after Jan. 1, but has made no award. Pittsfield, Mass., has awarded a contract for laying 600 ft. of 48-in. pipe to the William D. Burns Construction Co. Warwick, R. I., has completed plans for a $1,250,000 water system and will shortly be in the market for a large tonnage of pipe. Private pipe business is fair. Foundries are well filled up on 4-in. pipe. The market for 6 to 12-in. stock is at least $1 a ton lower than a fortnight ago, and concessions are still named on large dimensions. Prices are: 4-in., $45.10 to $46.10 a ton, delivered common Boston freight rate points; 6 to 12-in., $40.10 to $41.10. The usual $5 differential is asked on Class A and gas pipe.

Shapes and Plates.—The past fortnight was the dullest experienced by fabricators this year. Small shops are taking business at low prices. Plate consumers are buying in small amounts. Governor Ralph O. Brewster of Maine intimates that the State will spend $10,000,000 on bridges during the next year.

Coke.—New England ovens are doing a record-breaking business in domestic coke. One company, in retail sales alone, disposed of about 500 tons a day during the past week. The New England Coal & Coke Co. has lighted another battery of ovens, making a total of 350 now in operation, the full capacity of the plant. Foundry coke users are specifying against contracts freely. The price remains at $11 a ton, delivered within a $3.10 freight rate zone. In connection with the sale of $5,500,000 bonds, the Connecticut Coke Co., New Haven, Conn., announced that part of its product will be sold to industrial consumers. The first cargo of coal ever shipped from Soviet Russia to this country, about 5500 tons, is on its way to Boston. It comes from the Don Basin.

Old Material.—The movement of scrap out of New England continues active. The market for forge flashings, rails for rerolling and steel mill borings is a shade firmer, but no change in prices of other kinds of scrap is noted. Stove plate is in better demand than in months. For Massachusetts consumers, the market is $10.50 a ton, delivered, and for Connecticut consumption, $12.50. New England foundries are taking larger quantities of No. 1 machinery cast and textile cast, and stocks in yards have been materially reduced this month. A steamer will load 5000 tons of scrap the last of this month for Danzig. Exporters are buying against this shipment, paying around $10 a ton for heavy steel and automobile scrap, f.o.b. Boston dock.

Buying prices per gross ton, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.75 to $11.00
Scrap T rails	10.00 to 10.50
Scrap girder rails	9.50 to 10.00
No. 1 railroad wrought	10.50 to 11.00
No. 1 yard wrought	8.00 to 8.50
Machine shop turnings	6.25 to 6.75
Cast iron borings (steel works and rolling mill)	6.50 to 7.00
Bundled skeleton, long	8.50 to 9.00
Forge flashings	9.00 to 9.50
Blast furnace borings and turnings	6.25 to 6.75
Forge scrap	6.50 to 7.00
Shafting	14.50 to 15.00
Steel car axles	16.00 to 16.50
Wrought pipe 1 in. in diameter (over 2 ft. long)	9.50 to 10.00
Rails for rolling	10.50 to 11.00
Cast iron borings, chemical	9.50 to 10.00

Prices per gross ton deliv'd consumers' yards:

Textile cast	$14.00 to $14.50
No. 1 machinery cast	15.50 to 16.00
No. 2 machinery cast	13.50 to 14.00
Stove plate	10.50 to 12.50
Railroad malleable	15.00 to 15.50

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates	3.365c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Soft steel bars, small shapes	3.265c.
Flats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway rounds	6.60c.
Norway, squares and flats	7.10c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tie steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hex	*3.55c. to 5.55c.
Squares and flats	*4.05c. to 7.05c.
Toe calk steel	6.00c.
Rivets, structural or boiler	4.50c.

	Per Cent Off List
Machine bolts	50 and 5
Carriage bolts	50 and 5
Lag screws	50 and 5
Hot-pressed nuts	50 and 5
Cold-punched nuts	50 and 5
Stove bolts	70 and 10

*Including quantity differentials.

Birmingham

Steel Orders Large But Pig Iron Buying Is Light—Heavy Melting Scrap Up $1.50 a Ton

BIRMINGHAM, Oct. 9.—Pig iron inquiries are light and involve small tonnages. A large portion of the requirements for the fourth quarter is already on the books. The price of No. 2 foundry iron is firm at $16.25. The new No. 6 Fairfield furnace of the Tennessee company is now producing basic iron, having been placed in operation on Sept. 27. The No. 5 Ensley furnace of the Tennessee company was blown out on Oct. 2. Otherwise, operations are unchanged. Of the 19 furnaces in blast, 11 are on foundry, six on basic, one on ferromanganese and one on recarburizing iron.

Prices per gross ton, f.o.b. Birmingham dist. furnaces:

No. 2 fdy., 1.75 to 2.25 sil.	$16.25
No. 1 fdy., 2.25 to 2.75 sil.	16.75
Basic	16.25

Finished Steel.—Orders have been running heavy in the past few weeks. Bookings are better than at any time in the past year, and plant operations are correspondingly high. Inquiries continue good in all lines and prices show considerable firmness. Structural steel fabricating business continues to improve. The Ingalls Iron Works Co. has booked an order for 1800 tons for the Rhodes-Haverty Building, Atlanta. The Virginia Bridge & Iron Co. has an order for 3500 tons for the Sterick Building, Memphis, of which 2000 tons will be fabricated at Birmingham and the remainder at Memphis. Several small orders for reinforcing bars have been booked. Sixteen open-hearth furnaces have been active during the past four weeks. On Oct. 6, the Tennessee company shut down one at Ensley and placed one more in operation at Fairfield keeping the total at 12. The Gulf States Steel Co. is working four at Alabama City.

Cast Iron Pipe.—Inquiries are light. The total of new tonnage is not sufficient to change market conditions or plant operations. The United States Cast Iron Pipe Co. has booked 750 tons of 42-in. pipe for Milwaukee. Bidding is under way on 1500 tons of 24 to 30-in. pipe for Honolulu. The Dallas, Tex., tonnage, on which bids were opened three weeks ago, has not been placed. Makers predict quiet conditions for the next two or three weeks. Shipments are at about the same level as for the past month. Quotations remain at $36 to $37.

Coke.—The foundry coke market has been quiet during the past two weeks because all important requirements are covered for the last quarter. Shipments are moving in fair volume. No change has been made in the base quotations of $5 for both spot and foundry.

Old Material.—Demand is growing stronger and sales show a good increase. Heavy melting steel has advanced $1.50 a ton and scrap steel rails 50c. No. 1 cast is stronger. Other prices are the same. Shipments are heavy, and dealers' stocks are being reduced. Shortages are reported in a few lines.

Prices per gross ton, deliv'd Birmingham dist. consumers' yards:

Heavy melting steel		$12.50
Scrap steel rails	$12.00 to	12.50
Short shoveling turnings	8.00 to	8.50
Cast iron borings		8.00
Stove plate		13.50
Steel axles	19.00 to	20.00
Iron axles	21.00 to	22.00
No. 1 railroad wrought	10.00 to	10.50
Rails for rolling	14.00 to	15.00
No. 1 cast		15.00
Tramcar wheels	13.00 to	14.00
Cast iron carwheels	13.00 to	13.50
Cast iron borings, chem	13.50 to	14.00

Detroit

Automobile Production Is Still at a Peak

DETROIT, Oct. 9.—Employment in the Detroit district has indicated a slight slackening of industrial activity in the last two weeks. The labor barometer of the Employers' Association for the past week showed a total of 294,829, a decrease of 2744 from the week previous. The decrease during the week ended Sept. 29 was 3186. In spite of these decreases, however, the totals for last week and the previous week were more than 100,000 ahead of the same periods last year. Employment in the 51 major plants in Toledo for the week ended Sept. 29 totaled 35,869, an increase of 741 over the previous week. The figure of a year ago was 22,617.

Since the introduction on July 28 of its new model, the Buick Motor Car Co. has shipped 64,628. A new weekly production record has been set up with a total of 7600 units. On Friday, Sept. 28, a single hour's production was 150 cars, and on the same day a record was made in the production of 1600 engines. The September shipments of this company totaled 26,800, against 23,871 in the same month a year ago. This shows a slight decrease from the 27,476 shipped in August. Production now is running at about 1370 cars a day.

Shipments of Cadillac and LaSalle cars in September were approximately 5000 units, and it is reported that October and November schedules have been raised to full plant capacity.

The Chevrolet Motor Co. produced 105,616 cars and trucks during September, a 70 per cent increase over the output of September, 1927. The first nine months' output by this company totaled 1,100,723, an increase of 447,969 units over the same period in 1927.

B. E. Hutchinson, vice-president and treasurer of the Chrysler Corporation, states that production of Plymouth cars will be doubled by Feb. 1, when 1000 units a day of that line will be turned out.

It is estimated that Ford Motor Car Co. shipped 100,000 cars and trucks in September, with daily production running approximately 5000 units a day, exclusive of the Ford Motor Co. of Canada, which is turning out 500 units a day. Thus far, 400,000 units of the new model A have been shipped.

The Graham-Paige Motors Corporation showed a total production for the first nine months of 65,486 units. With a quarterly production of 26,742 units, the third quarter output was more than double that of the first quarter.

The Hupp Motor Car Corporation is still breaking records in monthly production. September showed a total of 6536 cars. In the first nine months of the year 56,992 units were shipped.

A new record was set last month by the Olds Motor Works, with a total of 9301 units, an increase over the August figure, 7892 units, also better than the 7127 units of September a year ago. About 9000 cars are scheduled for October.

Reo production for September totals 3711 units, a decrease from 4823 turned out in August.

Third quarter sales for Willys-Overland were about 75,000 cars, against 39,000 for the same period of 1927.

Blaw - Knox President Denies Merger Reports

Albert C. Lehman, president Blaw-Knox Co, Pittsburgh, has issued a statement denying reports that the company is to be merged with the Universal Pipe & Radiator Co., the Pressed Steel Car Co., and, eventually, with the Baldwin Locomotive Works. Recently I. F. Lehman and George P. Rhodes, directors of the Blaw-Knox Co., were elected directors of the Pressed Steel Car Co., and more recently James D. Rhodes, also a director of the Blaw-Knox Co., was elected president of the Universal Pipe & Radiator Co., while George P. Rhodes and Albert C. Lehman were chosen directors of that company. The merger reports are believed to have grown out of these changes.

The American Telephone & Telegraph Co., New York, in the construction of new long distance telephone facilities during 1928, to cost $11,042,000, will use 22,282,000 lb. of copper wire in cables, 21,994,000 lb. of copper wire in open wire lines and 39,283,000 lb. of lead and 413,000 lb. of antimony in cable sheaths. The program includes extensions and additions to lines in all parts of the country and to the three transcontinental routes.

Canada

Improvement in Iron and Steel Demand and Production Continues in the Dominion

TORONTO, ONT., Oct. 9.—Practically all manufacturers allied with the iron and steel industry of Canada report general improvement in business. The record crop yield of the Canadian West has had a tendency to bring a stronger demand for agricultural implements. The automotive industry of Canada reports better production than at any time in its history. Mining operations in Ontario, Quebec and Manitoba have helped to stimulate the growing demand for iron and steel. Railroads have been responsible for much of the improvement in mill operations this year.

Robert Dodd, president Lake Superior Corporation, announced that the Algoma Steel Corporation, Sault Ste. Marie, Ont., a subsidiary, will show a profit of $329,000 on operation account for the quarter ended Sept. 30, against a deficit of $141,491 in the same period last year.

Pig Iron.—With practically all contract buyers covered to the end of the year, interest in the Canadian pig iron markets centers in the requirements of spot buyers. Both in number and in tonnage, spot sales are increasing. Total weekly sales are between 1500 and 2000 tons. Canadian producers still report strong competition from United States interests in our markets, especially in the Montreal district. While the Port Henry, N. Y., furnace is not shipping as much iron into this district as formerly, imports from that district are keenly felt in the Montreal territory. Agricultural implement makers continue to draw practically all their pig iron from the United States, and, with the increase in their needs, imports are greater than a year ago. Imports of pig iron from Great Britain and the Continent have dropped off and are having little effect on the Canadian market. The price situation is unchanged.

Prices per gross ton:

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	$23.60
No. 2 fdy., sil. 1.75 to 2.25	23.60
Malleable	23.60
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	25.00
No. 2 fdy., sil. 1.75 to 2.25	25.00
Malleable	25.00
Basic	24.00
Imported Iron, Montreal Warehouse	
Summerlee	33.50
Carron	33.00

Structural Steel.—For a Bell Telephone Exchange at Monkland and Hampton Streets, Montreal, 500 tons of structural and 150 tons of reinforcing bars will be required. Thomson & Johnson, architects, Belleville, Ont., are receiving bids for the erection of a hotel at Kingston, Ont., for which about 500 tons of structural steel will be needed; other pending jobs include 400 tons for an addition to the Public Library on College Street, Toronto; 200 tons for a school building on Windermere Avenue, Walkerville, Ont., and 150 tons for addition to the plant of the Wallace Barnes Co., Hamilton, Ont.

Old Material. — With consuming plants running almost at capacity, buyers are entering the market at frequent intervals and their spot orders are invariably for larger tonnages than was the case a month or six weeks ago. With the exception of heavy melting steel, for which dealers are now offering $9.50 per gross ton at Toronto, and $2 per ton higher for delivery at Hamilton, Ont., there has been no change in prices. Dealers believe that higher prices are warranted, but consumers are resisting advances. Export demand is drawing heavily on supplies in the Montreal district.

Dealers' buying prices:

	Per Gross Ton	
	Toronto	Montreal
Heavy melting steel	$9.50	$7.00
Rails, scrap	10.00	9.00
No. 1 wrought	9.00	11.00
Machine shop turnings	7.00	5.00
Boiler plate	7.00	6.00
Heavy axle turnings	7.50	6.50
Cast borings	7.50	5.00
Steel turnings	7.00	5.50
Wrought pipe	5.00	5.00
Steel axles	14.00	20.00
Axles, wrought iron	16.00	22.00
No. 1 machinery cast	....	16.00
Stove plate	....	13.00
Standard carwheels	....	16.00
Malleable	....	13.00
Per Net Ton		
No. 1 machinery cast	15.00	....
Stove plate	9.00	....
Standard carwheels	13.00	....
Malleable scrap	13.00	....

Buffalo

Pig Iron Firm but Demand Is Lighter—Steel Plants Busy —Scrap Market Strong

BUFFALO, Oct. 9.—The pig iron market is quiet but firm. No large tonnages were bought during the week, but there was steady booking of lots up to 100 tons at current prices. Some sellers are predicting a further advance for first quarter. The largest inquiry is for 500 tons of malleable from a central New York melter. Shipments have been heavy. In the week ended Oct. 6 barge canal pig iron shipments were 3625 tons.

Prices per gross ton, f.o.b. furnace:

No. 2 fdy., sil. 1.75 to 2.25	$17.00 to $18.00
No. 2X fdy., sil. 2.25 to 2.75	17.50 to 18.50
No. 1X fdy., sil. 2.75 to 3.25	18.50 to 19.50
Malleable, sil. up to 2.25	17.50 to 18.50
Basic	17.00 to 17.50
Lake Superior charcoal	27.28

Finished Iron and Steel.—Specifications for all kinds of material have been good, and mill operation is about 90 per cent. A brisk demand for sheets and strips is reported. On strip, quotations are 2.75c. to 2.85c. The local bar and shape market is firm at 2.05c. to 2.10c. A 20-story office building at Niagara Falls, N. Y., will require 1600 to 1800 tons of structural steel, and a school at Newark, N. Y., will require 700 tons. An addition to Auburn Prison, Auburn, N. Y., took 300 tons of reinforcing bars.

Old Material.—The market continues firm and dealers seeking to fill recent orders are having difficulty. Heavy melting steel on a railroad list brought $16.25, Buffalo. To cover a recent sizable sale of No. 2 heavy melting steel, dealers are offering $13.50. They are getting very little material to cover a sale to the same mill of No. 1 steel at $15.50. It is said that a purchaser of No. 1 steel would now have to pay $16.50 to $17. Dealers have offered $15.25, $15.50 and $15.75 for No. 1 steel to cover sales made at $15.50 to $16. Some No. 2 steel is going out of this district at $15.50, delivered Weirton, W. Va., and these shipments are limiting the amount of No. 2 to be picked up in Syracuse, Rochester and Utica districts for local consumption. Some sales of No. 1 machinery cast have been made at $16 to $16.25 and grate bars have been sold at $12.75 to $13.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades	
No. 1 heavy melting steel	$15.50 to $16.25
No. 2 heavy melting steel	14.00
Scrap rails	14.50 to 15.00
Hydraulic comp. sheets	14.00
Hand bundled sheets	11.00 to 11.50
Drop forge flashings	13.50 to 14.00
No. 1 busheling	14.50 to 15.25
Hvy. steel axle turnings	13.00 to 13.50
Machine shop turnings	7.25 to 7.75
No. 1 railroad wrought	13.50 to 14.00
Hvy. steel axle turnings	13.00 to 13.50
Acid Open-Hearth Grades	
Knuckles and couplers	16.50 to 17.00
Coil and leaf springs	16.50 to 17.00
Rolled steel wheels	16.50 to 17.00
Low phos. billet and bloom ends	17.00 to 17.50
Electric Furnace Grades	
Short shov. steel turnings	12.00 to 12.50
Blast Furnace Grades	
Short shov. steel turnings	12.00 to 12.50
Short mixed borings and turnings	10.00 to 10.50
Cast iron borings	10.00 to 10.50
No. 2 busheling	11.00 to 11.50
Rolling Mill Grades	
Steel car axles	18.25 to 18.75
Iron axles	21.00 to 22.00
Cupola Grades	
No. 1 machinery cast	15.75 to 16.25
Stove plate	14.00 to 14.50
Locomotive grate bars	12.25 to 12.75
Steel rails, 3 ft. and under	17.00 to 17.50
Cast iron carwheels	13.00 to 13.50
Malleable Grades	
Industrial	16.00 to 16.50
Railroad	16.00 to 16.50
Agricultural	16.00 to 16.50

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and struc. shapes	3.40c.
Soft steel bars	3.30c.
Reinforcing bars	2.75c.
Cold-fin. flats, sq. and hex	4.45c.
Rounds	3.95c.
Cold rolled strip steel	5.85c.
Black sheets (No. 24)	4.20c.
Galv. sheets (No. 24)	4.85c.
Blue ann'l'd sheets (No. 10)	3.50c.
Com. wire nails, base per keg	$3.60
Black wire, base per 100 lb.	3.75

Cincinnati

Malleable Pig Iron Sales of 6000 Tons—Sheet Mills Busy—Scrap Advances of 25c. to $1.25 a Ton

CINCINNATI, Oct. 9.—Purchases of malleable iron by district consumers enlivened the pig iron market somewhat the past week. Individual sales of 2500 tons and 2000 tons were reported, while orders for smaller lots brought the total to about 6000 tons. Inquiries, however, are inconsequential, with the exception of 500 tons of foundry iron for an Indiana melter. Prices are being well maintained. Northern Ohio sellers are holding to $17.50, base furnace, as a minimum quotation and Southern producers are adhering to $16.25, base Birmingham. Jackson County silvery iron is moving at a fairly good rate.

Prices per gross ton, deliv'd Cincinnati:

So. Ohio fdy., sil. 1.75 to 2.25	$18.89 to $19.89
So. Ohio malleable	20.14 to 20.89
Ala. fdy., sil. 1.75 to 2.25	19.94
Ala. fdy., sil. 2.25 to 2.75	20.44
Tenn. fdy., sil. 1.75 to 2.25	19.94
So'th'n Ohio silvery 8 per cent	26.89

Freight rates, $1.89 from Ironton and Jackson, Ohio; $3.69 from Birmingham.

Coke.—Consumers of by-product foundry coke are specifying liberally on current contracts, with the result that shipments this month are running ahead of those in September. A pickup in domestic grades also is noted. A Southern by-product coke maker still is soliciting business in this district at delivered prices which figure back exceptionally low at the ovens. Otherwise prices show stability.

Finished Material. — Specifications for bars, shapes and plates have continued heavy, and prices are steady at 1.95c. to 2c., base Pittsburgh, although it is possible to buy a large tonnage at 1.90c. Structural fabricating shops are busier, but the volume of work ahead is small. The wire goods market is rather quiet, with common wire nails selling at $2.69 per keg, delivered Cincinnati. This is equivalent to $2.55 at Ironton, plus a barge rate at 14c. to this city. District sheet mills have had liberal specifications and orders are sustaining production at 100 per cent of capacity. Backlogs are fairly substantial and insure a continuation of the present high rate of output during the remainder of October. There has been no change in sheet prices. Makers of rail steel reinforcing bars are quoting 1.90c., base Pittsburgh, and claim that they are booking small tonnages at that figure.

Old Material.—Heavy melting steel has advanced $1 a ton and practically all other items have gone up from 25c. to $1.25. These sharp increases are accounted for by the fact that dealers, realizing that there is a shortage of steel plant grades, are trying to buy all of the material available, whereas the holders of scrap are reluctant to sell on the present rising market. Railroad lists closing this week include the Norfolk & Western, 6500 tons; Southern, 7000 tons, and Louisville & Nashville, 12,000 tons. Steel rails make up about 10,000 tons of the total.

Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:

Heavy melting steel	$13.50 to $14.00
Scrap rails for melting	13.50 to 14.00
Loose sheet clippings	9.50 to 10.00
Bundled sheets	10.25 to 10.75
Cast iron borings	9.25 to 9.75
Machine shop turnings	8.75 to 9.25
No. 1 busheling	10.75 to 11.25
No. 2 busheling	6.50 to 7.00
Rails for rolling	13.75 to 14.25
No. 1 locomotive tires	13.50 to 14.00
No. 2 railroad wrought	13.50 to 14.00
Short rails	18.25 to 18.75
Cast iron carwheels	12.00 to 12.50
No. 1 machinery cast	17.50 to 18.00
No. 1 railroad cast	14.25 to 14.75
Burnt cast	10.50 to 11.00
Stove plate	10.50 to 11.00
Brake shoes	10.25 to 10.75
Railroad malleable	13.50 to 14.00
Agricultural malleable	12.50 to 13.00

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and struc. shapes	3.40c.
Bars, soft steel or iron	3.30c.
New billet reinforc. bars	3.15c.
Rail steel reinforc. bars	3.00c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-fin. rounds and hex	3.85c.
Squares	4.35c.
Black sheets (No. 24)	3.90c.
Galvanized sheets (No. 24)	4.75c.
Blue ann'l'd sheets (No. 10)	3.45c.
Structural rivets	3.85c.
Small rivets	65 per cent off list
No. 9 ann'l'd wire, per 100 lb	$3.00
Com. wire nails, base per keg	2.95
Cement c't'd nails, base 100 lb. keg	2.95
Chain, per 100 lb	7.55
	Net per 100 Ft.
Lap-weld. steel boiler tubes, 2-in.	$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.	19.00
4-in.	39.00

Youngstown

Valley Mills Operating at Nearly 90 Per Cent—Producers Have Large Unfilled Tonnages

YOUNGSTOWN, Oct. 9.—Production schedules of iron and steel companies in the Mahoning Valley are nearer a 90 per cent rate this week, as specifications for flat-rolled steels are released with liberality. For example, 49 of the Valley's 53 independent open-hearth furnaces are active, the only idle units being those which are down for relining or temporary repairs. The Republic Iron & Steel Co. is operating all 13 of its open-hearths at Youngstown and eight at Warren; the Youngstown Sheet & Tube Co. has 22 of its 24 furnaces in the Youngstown district in use; the Sharon Steel Hoop Co. is operating all six of its furnaces at Lowellville, Ohio. Of 127 Valley sheet mills, 113 are active, as are 14 of 20 tube mills. Seamless pipe mills are operating two turns per day.

Unfilled tonnage with the independents is sufficient to maintain a high average operating rate through October and into November.

Automobile interests are the heaviest buyers. A number of companies developing new models are seeking prices on sheets and strips for first quarter of 1929.

Steel works interests have withdrawn from the merchant pig iron market because of the heavy requirements for hot metal of their own steel-making plants.

Shipments of the Valley independents for the third quarter were considerably ahead of those for either of the two preceding quarterly periods. Earnings for the period are not likely to be as large as the increase in shipments would indicate. Better results in this respect may be expected from the fourth quarter.

The Youngstown Sheet & Tube Co. expects to operate by Dec. 1 its new by-product coke plant at the South Chicago blast furnaces. Production of coke at this point will materially cut costs of producing pig iron, it is expected.

It is understood that, with the exception of the Ford Motor Co., all of the principal automobile builders have accepted the new fourth quarter sheet prices and the new discount terms.

Little new buying of scrap has developed, as important consumers still are drawing against purchases made some time ago. Dealers, in covering short sales, are obliged to pay $16.50 to $17 for heavy melting steel; $16 to $16.50 for compressed sheets and $12 to $12.50 for machine shop turnings.

The year's operation of simplified recommendations concerning sheet steel, roofing ternes, eaves trough and conductor pipe and files and rasps will be reviewed at the forthcoming annual convention of the National Hardware Association. The Division of Simplified Practice has sent out questionnaires to those interested, seeking information as to the percentage of production in 1927 represented by existing standard sizes, the degree of adherence to the standards, possible changes and related matters.

The Marquette Iron & Steel Co., St. Louis, has been organized to mine iron and manganese ores and smelt them in its own furnace located near Brandsville, Mo., which has a daily capacity of 200 tons. E. M. McGary is president of the company; J. J. O'Brien, vice-president; M. J. Lynn, general manager, and W. H. Hallerberg, secretary and treasurer.

Non-Ferrous Metal Markets

Copper Holds Firm Position, Tin Slightly Weaker, Other Metals Unchanged

THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY

	Oct. 9	Oct. 8	Oct. 6	Oct. 5	Oct. 4	Oct. 3
Lake copper, New York	15.25	15.25	15.25	15.25	15.25	15.25
Electrolytic copper, N. Y.*	15.00	15.00	15.00	15.00	15.00	15.00
Straits tin, spot, N. Y.	48.50	48.75	....	49.00	49.37½	49.62½
Lead, New York	6.50	6.50	6.50	6.50	6.50	6.50
Lead, St. Louis	6.32½	6.32½	6.32½	6.32½	6.32½	6.32½
Zinc, New York	6.60	6.60	6.60	6.60	6.60	6.60
Zinc, St. Louis	6.25	6.25	6.25	6.25	6.25	6.25

*Refinery quotation; delivered price ¼c. higher.

Copper.—Although domestic consumers have generally covered their requirements through November and in some instances well into December, the demand from foreign buyers continues fairly active. Sales for shipment abroad are running about 2000 tons a day. Some copper for domestic use is still to be bought for December; current sales are largely made up of orders for that delivery, with a sprinkling of fill-in tonnage for requirements nearer by. Very little copper is available for October and November. Prices remain unchanged at 15.25c. per lb., delivered in the Connecticut valley, for electrolytic and at 15.50c. per lb., c.i.f. European ports, for exported metal, the official price of Copper Exporters, Inc. There is no apparent desire on the part of producers to see prices go higher, and, if an orderly market continues, the present quotations may be expected to remain through the year.

Tin.—The severe manipulation in recent weeks has kept consumers out of the market. Consumers have bought well and presumably are not in need of further supplies at the moment. Demands from the tin plate industry usually slacken at this season because of reduced operation of the mills, but the needs of the automobile industry, which takes about one-fifth of this country's tin consumption, continue large. From Monday to Thursday of last week about 500 tons changed hands, mostly among dealers. On Friday the market was more active and sales totaled about 400 tons. On Saturday, usually a dull day, transactions added up to 100 tons. On Monday and Tuesday of this week there were moderate sales. Prices have kept within a narrow range. The low point was on Tuesday at 48.50c., while the highest price was 49.62½c., which was paid on Oct. 3. The London market is weaker. Spot standard was quoted on Tuesday at £218 15s., future standard at £216 10s. and spot Straits at £219 5s.

Metals from New York Warehouse

Delivered Prices Per Lb.

Tin, Straits pig	51.00c. to 52.00c.
Tin, bars	53.00c. to 54.00c.
Copper, Lake	16.25c.
Copper, electrolytic	16.00c.
Copper, casting	15.25c.
Zinc, slab	7.25c. to 7.75c.
Lead, American pig	7.50c. to 8.00c.
Lead, bar	9.25c. to 10.25c.
Antimony, Asiatic	13.25c. to 13.75c.
Aluminum No. 1 ingots for remelting (guar'nt'd over 99% pure)	25.00c. to 26.00c.
Alum. ingots, No. 12 alloy,	24.00c. to 25.00c.
Babbitt metal, commerc'l grade,	30.00c. to 40.00c.
Solder, ½ and ½	32.75c. to 33.75c.

Metals from Cleveland Warehouse

Delivered Prices Per Lb.

Tin, Straits pig	54.00c.
Tin, bar	56.00c.
Copper, Lake	16.00c.
Copper, electrolytic	16.00c.
Copper, casting	15.25c.
Zinc, slab	8.00c.
Lead, American pig	7.00c. to 7.25c.
Lead, bar	9.50c.
Antimony, Asiatic	16.00c.
Babbitt metal, medium grade	18.75c.
Babbitt metal, high grade	58.00c
Solder, ½ and ½	32.25c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.

Sheets—	
High brass	19.75c.
Copper, hot rolled	24.50c.
Copper, cold rolled, 14 oz. and heavier	26.25c.
Seamless Tubes—	
Brass	24.62½c.
Copper	25.50c.
Brazed Brass Tubes	27.75c.
Brass Rods	17.50c.

From New York Warehouse

Delivered Prices, Base Per Lb.

Zinc sheets (No. 9), casks	10.00c. to 10.50c.
Zinc sheets, open	11.00c. to 11.50c.

Non-Ferrous Rolled Products

Mill prices on brass and copper products are still quoted at the advances of Sept. 24. Zinc sheets and lead full sheets have not changed since July 30 and May 29, respectively.

List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—	
High brass	19.75c.
Copper, hot rolled	24.00c.
Zinc	9.75c.
Lead (full sheets)	10.00c. to 10.25c.
Seamless Tubes—	
High brass	24.62½c.
Copper	25.50c.
Rods—	
High brass	17.50c.
Naval brass	20.25c.
Wire—	
Copper	17.25c.
High brass	20.25c.
Copper in Rolls	23.00c.
Brazed Brass Tubing	27.75c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also to St. Louis on shipments to points west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide	33.00c.
Tubes, base	42.00c.
Machine rods	34.00c.

Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged customers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	13.00c.	14.50c.
Copper, hvy. and wire	12.50c.	13.50c.
Copper, light and bottoms	11.00c.	12.25c.
Brass, heavy	7.25c.	8.25c.
Brass, light	6.25c.	7.25c.
Hvy. machine composition	9.75c.	11.00c.
No. 1 yel. brass turnings	9.25c.	9.75c.
No. 1 red brass or compos. turnings	9.25c.	10.25c.
Lead, heavy	5.25c.	5.625c.
Lead, tea	3.75c.	4.25c.
Zinc	3.25c.	3.625c.
Sheet aluminum	12.50c.	14.50c.
Cast aluminum	11.75c.	13.50c

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Consumers' Doors in City Limits)

	Base per Lb.
Sheets—	
High brass	19.75c.
Copper, hot rolled	24.00c.
Copper, cold rolled, 14 oz. and heavier	26.25c.
Zinc	10.00c.
Lead, wide	9.75c.
Seamless Tubes—	
Brass	26.12½c.
Copper	27.00c.
Brass Rods	17.50c.
Brazed Brass Tubes	27.75c.

The Singapore price on Tuesday was £220 15s.

Lead.—Heavy sales last week have been followed by a quieter market this week. Most of the sales were for October and November, for which consumers are now believed to be pretty well covered. Prices are unchanged at 6.32½c. per lb., St. Louis, and 6.50c., New York.

Zinc.—This market is quiet. There is steady buying, but it is in small lots for nearby requirements. Production of ore in the Joplin district last week increased to 12,000 tons, compared with 10,500 tons in the previous week. Stocks of ore are now estimated at more than 56,000 tons, nearly the high point of the year.

Antimony.—Sales of antimony were made throughout the week at 11.50c., New York, duty paid, for spot shipment and at 11c. for future.

Nickel.—This metal is unchanged in price at 35c. per lb. for ingot, 36c. for shot and 37c. for electrolytic.

Aluminum.—Virgin metal, 98 to 99 per cent, is quoted at 23.90c. per lb., delivered.

Non-Ferrous Metals at Chicago

CHICAGO, Oct. 9.—Shipments against contracts are heavy. Current purchases of metals are small in total volume. The old metal market is moderately active at unchanged prices.

Prices, per lb., in carload lots: Lake copper, 15.50c.; tin, 50c.; lead, 6.40c.; zinc, 6.35c. in less-than-carload lots; antimony, 12c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.75c.; red brass, 9.50c.; yellow brass, 7.25c.; lead pipe, 4.75c.; zinc, 3.50c.; pewter, No. 1, 30c.; tin foil, 36.25c.; block tin, 45.25c.; aluminum, 12c., all being dealers' prices for less-than-carload lots.

Higher Output Features London Tin

Continued increase in production continues to feature the London tin market, but the increase during the latter half of this year will not be at the same rate as during the first half, Trade Commissioner Homes S. Fox, London, informs the Department of Commerce.

At the same time consumption seems to remain high, although over the 12 months ended Aug. 31 supplies evidently increased more than deliveries, compared with the preceding 12 months. During August there was a further small increase in total visible supplies, the figure at the end of the month standing at 18,380 long tons (taking the average of the two leading trade authorities).

Straits shipments of tin for the first eight months of 1928 are reported at 64,030 tons, compared with 51,750 tons during the corresponding period of 1927, representing an increase of 12,280 tons. Supplies of Chinese tin, however, have fallen off, possibly in anticipation of the erection of the proposed smelter in Hong Kong.

Reports received in London from Tasmania state that a new tin-bearing area has been discovered in the southwestern portion of the island, and that negotiations are also under way for the development of tin fields in the northeastern section. Development of alluvial tin deposits in Bohemia also is indicated by reports that it is proposed to start work shortly on five tin-bearing areas in that district, claimed to have a probable life of 20 years.

River Steel Shipments Effect Large Savings

Pittsburgh district steel manufacturers this year will probably save the difference between water and rail freight charges on at least 1,000,000 tons of their product moving beyond the confines of the Pittsburgh district. Latest figures released by the Pittsburgh office, United States Engineers' Corps, show that in August 124,751 net tons of steel products were moved on the Ohio River. This brings the total Ohio River movement for the eight months ended with August to 769,556 net tons, a monthly average of 96,194 tons, which if maintained to the end of the year would mean a total of 1,154,328 tons.

Ohio River tonnage figures offer a close approximation of the movement of steel products to the more distant destinations and provide a more reliable guide to this movement than is furnished by Allegheny and Monongahela River figures. Only 50 tons of steel products moved on the Allegheny in August, but on the Monongahela, the shipments, as reported by lock keepers, totaled 109,738 tons. These streams join to form the Ohio River at Pittsburgh and naturally carry much of the tonnage that is eventually reported by Ohio River lock keepers. Figures of all three rivers include some interplant movements within the Pittsburgh district. Such movements also mean a saving over what the same movement by railroad would cost.

In August the Ohio River tonnage exceeded the total of the movement on the two other rivers, suggesting that all of the tonnage that originated on the Allegheny and Monongahela rivers found its way into the Ohio. But in July, the Ohio River total was 90,145 tons, while the movement on the Monongahela was 91,834 tons, indicating an interplant tonnage of 1689 tons.

Some idea of the saving that is effected by water-borne steel products to more distant destinations may be gleaned from the fact that the cost on commercial lines of conveying steel from the Pittsburgh district to Memphis, Tenn., a distance of 1200 miles, is approximately $5 a net ton, that charge including handling costs at both origin and destination. The rail-road rate to the same destination is 56c. per 100 lb., or $11.20 per net ton. The indicated saving to Memphis is $6.25 per ton. River shipments of steel have helped Pittsburgh district mills in reaching distant markets that for a time were closed to them as a result of high freight rates and the abolishment of Pittsburgh as a sole basing point for steel prices. A barge load of wire products, in a recent tow of finished steel products of the Jones & Laughlin Steel Corporation, to be turned over to the Federal Barge Line at Cairo, Ill., for delivery at Minneapolis, illustrates the point.

Oil Company Buyers to Meet in Tulsa, Okla.

The Oil Company Buyers' Group of the National Association of Purchasing Agents will hold a session in Tulsa, Okla., on Tuesday, Oct. 23. The date selected is during the International Petroleum Exposition, which runs from Oct. 20 to 29. One of the subjects scheduled for discussion by the group is the proper marking of valves and fittings for oil country use, and the possibility of standard specifications for these items. The oil company purchasing agents have given considerable thought to this subject for some time, with the result that it will be discussed quite thoroughly when they meet in formal session.

Emory A. Cook, purchasing agent Twin State Oil Co., Tulsa, is chairman of the group. A. M. Bowman, purchasing agent of the Humble Oil & Refining Co., Houston, Tex., and president National Association of Purchasing Agents, is expected to be present.

Pipe Ball Standardization Recommended

WASHINGTON, Oct. 9.—The size of the mandril core and the curvature of the nose, and the length of the bearing of pipe balls will be recommended as a result of a preliminary conference held here on Thursday of last week under the auspices of the Division of Simplified Practice, Department of Commerce. The conference was attended by pipe ball makers and tube mill representatives. The committee selected to draft the recommendation consists of H. P. Evans, Pettibone Mulliken Co., Chicago; J. S. Morrison, J. S. Morrison Co., Pittsburgh; Albert Pancoast, Union Spring & Mfg. Co., Pittsburgh; J. A. Trainor, Taylor-Wharton Iron & Steel Co., High Bridge, N. J., and a representative of the Damascus Crucible Steel Co. The recommendation is to be resubmitted to all pipe mills of the country for approval. The matter of metal sections and design of core on large size balls is to be taken up as a secondary move and worked out by ball manufacturers themselves later.

Fabricated Structural Steel

New Projects Include 26,500 Tons for New York Bridge and 20,000 Tons for Cleveland Union Terminals Co. Bridge Work

SWELLED by 26,500 tons for a bridge over the Kill Van Kull at New York, 20,000 tons for bridges and road work for the Cleveland Union Station and 18,000 tons for a commercial building at Philadelphia, new fabricated projects reported during the week amounted to 61,500 tons. Other sizable projects were 7500 tons for an airplane hangar at Akron, Ohio, and 6700 tons for an additional section of the New York subways. Awards totaled 33,300 tons, the largest having been 4500 tons in buildings for the Pittsburgh Plate Glass Co. at Crystal City, Mo., and 3400 tons for a Y. M. C. A. in New York. Awards follow:

ANDOVER, MASS., 100 tons, boiler house for Phillips-Andover Academy, to New England Structural Co.

HARTFORD, CONN., 100 tons, brass foundry addition, to Eastern Bridge & Structural Co.

STATE OF MAINE, 400 tons, highway bridge, to American Bridge Co.

HOWLAND, ME., 500 tons, highway bridge, to American Bridge Co.

NEW YORK, 2800 tons, Salvation Army building on West Fourteenth Street, to unnamed fabricator.

NEW YORK, 3400 tons, Y. M. C. A. Building on West Sixty-third Street, to unnamed fabricator.

NEW YORK, 1500 tons, apartment building on Fifth Avenue, to Paterson Bridge Co.

LAWTON, N. Y., 260 tons, highway bridge, to American Bridge Co.

LONG ISLAND RAILROAD, 200 tons, bridge at Bay Ridge, Brooklyn, to unnamed fabricator.

JERSEY CITY, 1500 tons, theater on Journal Square, to unnamed fabricator.

PHILADELPHIA, 1200 tons, Garden Court apartments, to R. B. Lederle & Co.

ATLANTIC CITY, N. J., 1250 tons, Chalfonte-Haddon Hall apartments, to Bethlehem Steel Co.

PENNSYLVANIA RAILROAD, 500 tons, miscellaneous work at Philadelphia, to McClintic-Marshall Co.

PENNSYLVANIA RAILROAD, 218 tons, bridge at Woodbury, N. J., to Phoenix Bridge Co.

NEW ORLEANS, tonnage not stated, 7680-ft. span over Biloxi Bay, to International Steel & Iron Co.

SHREVEPORT, LA., 600 tons, municipal auditorium, to Glassell-Wilson Co.

MEMPHIS, TENN., 350 tons, two barges for Anderson, Tully Co., to American Bridge Co.

MEADVILLE, PA., 3700 tons, mill for Viscose Co., to McClintic-Marshall Co.

TARENTUM, PA., 150 tons, coal trestle, to Guibert Steel Co.

TRAFFORD, PA., 800 tons, micarta buildings for Westinghouse Electric & Mfg. Co., to Jones & Laughlin Steel Corporation.

RAPP'S MILL, VA., 175 tons, highway bridge, to American Bridge Co.

PITTSBURGH, 750 tons, five coal barges for Monessen Coal & Coke Co., to Riter-Conley Co.

PITTSBURGH, 118 tons, Ohio River lock gates, to Dravo Contracting Co.

CINCINNATI, 180 tons, St. Louis Church, to McClintic-Marshall Co.

CINCINNATI, 100 tons, platform at Central Union Station, to McClintic-Marshall Co.

ERIE RAILROAD, 250 tons, bridge at Youngstown, Ohio, to American Bridge Co.

NORFOLK & WESTERN RAILWAY, 2500 tons, bridge at Columbus, Ohio, to Mount Vernon Bridge Co.

CLEVELAND, 600 tons, building for W. S. Tyler Co., to National Iron & Wire Co.

CHICAGO, BURLINGTON & QUINCY, 1200 tons, bridges, to American Bridge Co.

LA SALLE, ILL., 900 tons, building for Marquette Cement Mfg. Co., to Mississippi Valley Structural Steel Co.

CRYSTAL CITY, MO., 4500 tons, buildings for Pittsburgh Plate Glass Co., to McClintic-Marshall Co.

ST. LOUIS, 1800 tons, dairy building for National Exhibition Co., to Stupp Brothers Bridge & Iron Co.

PLATTSMOUTH, NEB., 1500 tons, bridge, to Omaha Steel Works.

TUCSON, ARIZ., 650 tons, office building for Consolidated National Bank, to McClintic-Marshall Co.

GLENDALE, CAL., 130 tons, Professional Building, to Llewellyn Iron Works.

LONG BEACH, CAL., 275 tons, store, Fourth and Pine Streets, to Llewellyn Iron Works.

LOS ANGELES, 130 tons, plant for Byron Jackson Pump Co., East Slauson Avenue, to McClintic-Marshall Co.

LOS ANGELES, 200 tons, office building, 529 South Broadway, to Llewellyn Iron Works.

SAND POINT, WASH., 400 tons, Government hangar, to Isaacson Iron Works.

OLYMPIA, WASH., 120 tons, Coweeman River bridge, to Pacific Car & Foundry Co.

CHELAN, WASH., 124 tons, Cashmere bridge, to unnamed interest.

SEATTLE, 1100 tons, buildings for Weyerbach Pulp & Paper Co. at Hoquiam and Port Townsend, to Wallace Bridge & Structural Steel Co.

SEATTLE, 390 tons, crane runway for Pacific Coast Steel Co., to Wallace Bridge & Structural Steel Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

NEW YORK, 26,500 tons, bridge over Kill Van Kull between Port Richmond, S. I., and Bayonne, N. J.; bids Nov. 5.

NEW YORK, 6700 tons, subway section 4, route 106 in Bronx; bids Oct. 16.

NEW YORK, 800 tons, Brearley School in East Eighty-third Street; Turner Construction Co., general contractor.

BROOKLYN, 2500 tons, addition to St. George Hotel.

LONG BEACH, N. Y., 400 tons, school.

BLOOMFIELD, N. J., 150 tons, Chevrolet garage and service station.

PHILADELPHIA 16,000 to 18,000 tons, Reading commercial building at Broad and Callowhill Streets; general contract pending.

NIAGARA FALLS, N. Y., 1600 to 1800 tons, Niagara Falls United office building; bids close in two weeks.

NEWARK, N. Y., 700 tons, school.

CLEVELAND, 20,000 tons, bridges and road work for Cleveland Union Terminals Co.

AKRON, OHIO, 7500 tons, hangar for Goodyear-Zeppelin Corporation.

AKRON, 400 tons, factory building for General Tire & Rubber Co.

LORAIN, OHIO, 350 tons, State viaduct.

COLUMBUS, OHIO, 350 tons, municipal police station.

CINCINNATI, 550 tons, convent for Sisters of Mercy.

ROCKFORD, ILL., 1500 tons, foundry for International Harvester Co.

ALABASTER, MICH., 400 tons, building for United States Gypsum Co.

BLOOMINGTON, ILL., 400 tons, office building.

PASADENA, CAL., 100 tons, church; bids being taken.

LOS ANGELES, 300 tons, apartment building, Hillcrest and Franklin Streets; bids being taken.

SEATTLE, 231 tons, plates for 24-in. riveted pipe line; bids Oct. 26.

Continental Leadership in Iron and Steel Exports

The iron and steel division, Department of Commerce, has compiled a statement of comparative exports of iron and steel products of various producing countries for the pre-war year 1913 and the after-war years 1920-1927, inclusive, which shows that Germany led during both periods through 1926, giving way in 1927 to France and Belgium-Luxemburg. In 1913 exports from Germany aggregated 6,491,262 gross tons, Great Britain being second with 4,969,225 tons. During the period following the war Germany again reached first place, exporting 5,347,823 tons in 1926. But in 1927 France exported 5,603,000 tons and Belgium-Luxemburg, 4,607,000 tons, while Germany dropped to 4,230,000 tons—less than 1 per cent above Great Britain. The nearest approach to this volume made by the United States was in 1920, with a total of 4,927,800 tons.

The figures, stated in gross tons, follow:

IRON AND STEEL EXPORTS OF FIVE COUNTRIES

	United States	Belgium-Luxemburg	France	Germany	Great Britain
1927	2,183,091	4,607,000*	5,603,000*	4,230,000*	4,200,000*
1926	2,167,213	3,765,420	4,191,009	5,347,823	2,987,669
1925	1,762,572	3,203,915	4,009,127	3,548,773	3,731,366
1924	1,805,977	‡	‡	‡	3,851,435
1923	2,010,171	‡	‡	‡	‡
1922	1,985,733	‡	‡	2,654,676	‡
1921	2,209,864	‡	‡	‡	‡
1920	4,927,800	935,287†	883,932	‡	3,251,225
1913	2,722,618	1,575,479†	629,674	6,491,262	4,969,225

*Excluding scrap; these figures were not included in the statement made by the division.

†Belgium only.

‡Data not given in statement cited.

PERSONAL

N. L. MORTENSON has been appointed chief engineer of the Cutler-Hammer Mfg. Co., Milwaukee, succeeding T. E. BARNUM, who has been made consulting engineer for the company in order to give uninterrupted attention to engineering problems

N. L. MORTENSON

and outside engineering relations. Mr. Mortenson has been associated with the company for 21 years, the last five as assistant to Mr. Barnum. He was born in Denmark and received his formal technical education in that country and Germany. He has contributed numerous articles to the technical press and has been active in the work of the American Institute of Electrical Engineers and of the Association of Iron and Steel Electrical Engineers.

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KENNETH B. SPAULDING, formerly sales manager McCrosky Tool Corporation, Meadville, Pa., has been named sales manager of the Wesson Sales Co., Detroit. The company handles sales of Eclipse interchangeable counterbores and John Bath ground thread taps, and has recently been appointed distributer in Detroit and Chicago for Widia cutting metal manufactured by the Krupp works at Essen, Germany.

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SPENCER S. SWASEY has been appointed manager of the equipment department of the Walter A. Zelnicker Supply Co., 511 Locust Street, St. Louis. For the last three years he has been head of his own contracting company at Chicago and previously was associated for 12 years with the George D. Whitcomb Co., Rochelle, Ill., maker of industrial locomotives.

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FRED M. YOUNG, president Young Radiator Co., Racine, Wis., has been made a captain in the specialist reserve, United States Army Air Corps. He served as aeronautical engineer and pilot in the air service during the war and has kept in touch with the work through his contacts with the automotive engineering field.

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O. H. WATSON has been placed in charge of an office which has been opened by the Erie Steel Construction Co., Erie, Pa., at 231 Engineering Building, Chicago.

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DAVID D. LUPTON, vice-president David Lupton's Sons Co., Philadelphia, and chairman of the company's industrial committee, was recently presented with a gavel by the members of the present and former committees, as an expression of their appreciation of his leadership and guidance since the inception of the committee nine years ago.

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HAROLD L. CRULL has been appointed assistant sales manager of the Oilgear Co., Milwaukee.

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A. B. ROOT, JR., formerly assistant to the vice-president of the Hunt-Spiller Mfg. Corporation, South Boston, has been made assistant general manager. He is a past-president of the New England Foundrymen's Association and is active in the affairs of the national organization. E. C. FELTON, also formerly assistant to the vice-president, has been made assistant treasurer of the corporation.

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HENRY J. LOWDON, formerly sales manager for the Eldridge Buick Co., Seattle, Wash., has been made general manager of Best Lock Co., Seattle.

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JOHN A. OARTEL, director of safety Carnegie Steel Co., Pittsburgh, will speak on "Safety—Plus," at the regular monthly meeting of the Pittsburgh Foundrymen's Association in the Norse Room, Fort Pitt Hotel, Monday evening, Oct. 15.

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P. R. HAWTHORNE, welding engineer Petroleum Iron Works Co., Sharon, Pa., will be the speaker at the monthly meeting of the Pittsburgh chapter of the American Welding Society at the William Penn Hotel, Pittsburgh, Wednesday evening, Oct. 31. His subject is "The Petroleum Iron Works Fluid Fusion Process of Welding."

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H. A. DEFRIES, metallurgist Ludlum Steel Co., Watervliet, N. Y., will speak on "Nitralloy" at the October meeting of the Indianapolis chapter of the American Society for Steel Treating, to be held at the Chamber of Commerce, Monday evening, Oct. 15.

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J. LEONARD REPLOGLE, formerly head of the Replogle Steel Co., Wharton, N. J., and a director in the Warren Foundry & Pipe Corporation, its successor, will become a special partner in the New York Stock Exchange firm of Harris, Winthrop & Co. on Nov. 1.

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WILLIAM H. WOODIN, JR., son of William H. Woodin, president of the American Car & Foundry Co. and the American Locomotive Co., New York, has been appointed director of research for the first named company, with headquarters at 30 Church Street, New York. He has named A. H. WOBBE, assistant director of research; J. W. STEINMEYER, research engineer, and R. M. ALLEN, research metallurgist. The younger Mr. Woodin acquired important technical training in the Berwick, Pa., plant of

W. H. WOODIN

the Car & Foundry company, where he served as an iron worker and a practical molder in the shops. He later carried on research and practical experiments in metallurgy and has also been active as a microscopist and electrical engineer. In his new capacity he will be prominently engaged in the development of products outside the railroad equipment field to which the company has recently been devoting considerable time.

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WALTER G. HILDORF will be placed in charge of all metallurgical work of the Timken Steel & Tube Co., Canton, Ohio, effective Oct. 15. For several years he has been metallurgical engineer of the Reo Motor Car Co., Lansing, Mich.

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C. R. VANCE has been appointed sales manager of the Welker Machinery Co., Inc., 650 Beaubien Street, Detroit. The company was known as the E. H. Welker Co. until Oct. 1.

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J. F. DRAPER has returned to the Jamison Steel Co., 77 Natoma Street, San Francisco, as manager of the sales department. He started in business with that company's sales department 14 years ago, but six years later became associated with the Pacific Mfg. & Tool Co., Portland, Ore.

WILBUR B. TOPPING, general manager of sales Republic Iron & Steel Co., Youngstown, has resigned, effective Nov. 1, and ALEXANDER E. WALKER, assistant general manager of sales, has been named to succeed him. Mr. Topping has been with the company for 20 years, his first connection having been at the Pioneer blast furnaces in Alabama. In 1910 he was transferred to the general sales office, at that time located at Pittsburgh. When a Philadelphia district office was opened in 1912, Mr. Topping was appointed its manager. His next position was as Cleveland district sales manager and from there he was transferred to the general sales department in Youngstown and appointed assistant general manager of sales. He was made general manager of sales in 1919. Mr. Walker was a salesman in the Chicago office of the LaBelle Iron Works, Steubenville, Ohio, before he joined the Republic company in 1916 as assistant to the late DANIEL GEARY, then assistant general sales manager in charge of pipe sales. He succeeded Mr. Geary in 1919 and later was made assistant manager of sales in charge of pipe and sheets. With the reorganization of the sales personnel of the Republic company, following its absorption of the Trumbull Steel Co. last April, he was appointed assistant general manager of sales.

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S. S. ROBINSON, for six years sales manager at Erie, Pa., for Pickands, Mather & Co., Cleveland, has been appointed assistant sales manager for Pickands, Brown & Co., Chicago. He is a graduate of Harvard University, and began his business career in the Cleveland sales department of Pickands, Mather & Co.

To Learn Engineer's Status in Industry

As a part of a plan to ascertain the status of the mechanical engineer in industry, members of the Machine Shop Practice Division of the American Society of Mechanical Engineers are being canvassed by a questionnaire calculated to learn the ages and salaries of men engaged in specific positions in the machine shop field. The questionnaires are to be compiled without signatures and represent an activity of the society to be extended probably to all the professional divisions of the organization. The findings are to be compiled in a general report.

Bituminous coal production in the United States for the week ended Sept. 29 is reported by the Bureau of Mines at 11,059,000 net tons. This is the largest production for several months, and is just 1,000,000 tons higher than in the corresponding week of 1927. Production for the year to date, however, is 40,000,000 tons behind 1927, standing this year at 352,977,000 tons.

American Mining Congress in Washington

Congressional legislation affecting the mining industry, including federal taxation of mines; advanced steps in the mechanization of mines; and improved production and marketing methods for minerals, will be considered by the American Mining Congress at its thirty-first annual convention to be held in Washington Dec. 5 to 8, inclusive, at the Mayflower Hotel. It is expected that the program will include addresses by members of Congress, officials of government bureaus dealing with mining questions and leading metal and coal mining operators from the various producing fields.

Fix Date for Hearings on Scrap Definitions

Following the suggestion of the shippers' subcommittee appointed in April at the instance of the Consolidated Classification Committee to prepare a description of scrap iron and steel, arrangements have been made for three meetings at which shippers and consumers of scrap will have an opportunity to discuss with the classification committee the definition proposed by the subcommittee. This definition was printed in THE IRON AGE of Sept. 6, page 584. The meetings, all scheduled for 10 a. m., are to be held on Oct. 18, in room 404, 143 Liberty Street, New York; on Oct. 24, in room 404, Chicago Union Station, Chicago, and on Oct. 31, in room 1015, 101 Marietta Street, Atlanta, Ga. Later a conference with the railroads in Washington is planned, to which representatives of the Interstate Commerce Commission will be invited to approve the description agreed upon by the classification committee and the shippers' subcommittee.

Classification of Coal

A standard classification for coal is proposed and described in Bulletin No. 180 of the Engineering Experiment Station of the University of Illinois, Urbana. This pamphlet of 62 pages, by Prof. Samuel W. Parr, may be obtained from the university for 35c. Briefly, Professor Parr proposes the progressive grading of solid fuels in 10 groups: Anthracite, semi-anthracite; bituminous A; bituminous B; bituminous C; bituminous D; lignite; peat; cannel and wood.

The limits of volatile matter are governing factors in the first four groups, the percentages running in the first up to 8, then 8 to 12, 12 to 24, and 24 to 50. Bituminous C and D are of higher volatile matter than B, but there is overlapping in the groups. The pamphlet gives a large number of analyses of coals from all over the United States and a number of foreign countries, more than half its volume being occupied by tables.

Obituary

ABRAM JAMES, proprietor of the Pioneer Foundry, LaCrosse, Wis., died Sept. 30 after a brief illness, aged 74 years. He was born in England and came to America in 1869, joining several brothers in the ownership and management of the Pioneer shop, established in 1856 as one of the first foundries in Wisconsin west of Milwaukee.

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DANIEL PARDEE SMITH, one of the organizers of the Reed Mfg. Co., Newark, N. Y., died at his home in that city on Oct. 1, aged 85 years. He served as president of the company for many years and prior to his retirement some years ago was active in public utility work in the surrounding district.

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GEORGE E. HALL, for 12 years president and general manager of the Boston Woven Hose & Rubber Co., Boston, died suddenly at Osterville, Mass., on Oct. 3. He was born at Brattleboro, Vt., in 1868, and before joining the Boston company in 1907, was associated with the International Paper Co., Watertown, N. Y.

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ROBERT LAIDLAW, one of the founders of Laidlaw & Dunn, Cincinnati, now a plant of the Worthington Pump & Machinery Corporation, died Oct. 6 at Brockville, Ont., aged 80 years. He was active in business and civic circles in Cincinnati prior to 1899, when he retired.

More Men Working in Manufacturing Plants

Employment in manufacturing industries increased 1.5 per cent in August, compared with July, and payroll totals increased 3.2 per cent, according to returns to the Bureau of Labor Statistics, Department of Labor. Increased employment was shown in all branches of the iron and steel group except cast iron pipe and machine tools. Iron and steel employment in general rose 1.3 per cent, while the cast iron pipe industry showed a decline of 0.1 per cent and the machine tool industry a drop of 5.4 per cent. Structural iron work employment increased 4.1 per cent, and employment in foundries and machine shops increased 0.5 per cent.

Rates on iron and steel scrap, in carloads, from points in Central Freight Association and Western Trunk Line territories to Kokomo, Ind., were held to be unreasonable and unduly prejudicial to the extent that they exceed 85 per cent of the contemporaneous sixth class rates, in a recent report by William A. Disque, attorney-examiner of the Interstate Commerce Commission. The complainant was the Continental Steel Corporation, whose plant at Kokomo, according to the report, uses between 250,000 and 300,000 tons of scrap annually.

Machinery Markets and News of the Works

Business Still at a High Rate

Machine Tool Orders and Inquiries in First Week of October Show No Letdown

MACHINE tool business in the first week of October showed no letdown from the high rate of September. The automobile and aviation industries continue important factors in maintaining the volume of machinery sales, but orders come from diversified sources. Indications are that the high sales records of July, August and September will be equaled, at least, in October.

Production at machine tool plants, while spotty, is in most cases at nearly full capacity. Night shifts are not uncommon in the effort to meet delivery promises. Unfilled orders have accumulated at some plants so that difficulties are experienced in making early shipments.

The White Motor Car Co., Cleveland, will buy considerable shop equipment for the manufacture of a new truck model it will put on the market soon. Orders from automobile companies in the past week included one from a Detroit company for six automatic lathes, while a maker of airplane engines ordered four large engine lathes.

Foreign business has been increasing. Cincinnati machine tool builders have received orders for five production lathes for Czechoslovakia and four lathes for Holland.

New York

NEW YORK, Oct. 9.—The week's business in machine tools consisted of a fairly large number of single-machine orders and one order of considerable size for special machinery. September business was good, and compared favorably with that of August, which was a good month. So far this month there has been no apparent let-down either in the number of orders or inquiries, and local sellers are confident that the recent satisfactory market condition will remain through October. Inquiries for heavy tools, including several large lathes, were better in the past week than they have been in some time.

Niles-Bement-Pond Co. has sold a 42-in. x 14 ft. Time-Saver planer. Sales by Pratt & Whitney division of that company included three vertical shapers, five thread milling machines, two jig borers, two profiling machines, two lathes, nine deep-hole drilling machines, rotary surface grinder and a production hand miller.

Plans have been approved by General Petroleum Corporation of California, Inc., 26 Broadway, New York, a subsidiary of Standard Oil Co. of New York, same address, for new refinery at Torrance, Cal., with capacity for handling 30,000-bbl. crude oil per day, and storage and distributing facilities for 134,000 bbl., to cost about $2,500,000 with equipment.

Montgomery Ward & Co., Chicago Avenue and Larrimore Street, Chicago, have awarded general contract to Wells Brothers Construction Co., 53 West Jackson Boulevard, Chicago, for a one, three and eight-story storage and distributing plant at Albany, N. Y., to cost about $1,500,000 with equipment.

Richmond Engine & Machine Works, Inc., 1836 Victory Boulevard, Port Richmond, S. I., William Cairney, president, has purchased part of property of Continental Milling & Warehouse Co. at New Brighton, improved with three-story shop, for establishment of new marine repair works. Present plant will be continued.

American Can Co., 120 Broadway, New York, has engaged Turner Construction Co., 420 Lexington Avenue, to prepare plans for a four-story plant at North Street and Wythe Avenue, Brooklyn, 90 x 200 ft., to cost close to $200,000 with equipment.

James P. Boyland, 305 East Kingsbridge Road, New York, architect, has plans for a two-story automobile service, repair and garage building, to cost about $190,000 with equipment.

Rizuto Motor Co., Peekskill, N. Y., is having plans drawn for a one-story service, repair and garage building, to cost about $100,000 with equipment. Fletcher-Thompson, Inc., 542 Fairfield Avenue, Bridgeport, Conn., is architect and engineer.

Aviation Corporation of the Americas, Inc., 100 East Forty-second Street, New York, recently organized to take over and expand Pan-American Airways, Inc., same address, has disposed of block of common stock, totaling about $3,000,000, and plans expansion, including airport construction, aircraft manufacture, and other work for establishment of air lines between United States and West Indies, Central and South America. Richard F. Hoyt is chairman of board.

Board of Trustees, Union Free School District No. 1, Altamont, N. Y., is considering installation of manual training equipment in new junior high school at Tupper Lake, to cost about $300,000. A. Howell Knox, 140 South Dearborn Street, Chicago, is architect.

Klein Iron Works, 65 Broadway, Astoria, L. I., is planning one and two-story addition, 100 x 135 ft., to cost about $75,000 including equipment.

Sikorsky Aviation Corporation has been formed with capital of 200,000 shares of stock, no par value, to take over Sikorsky Mfg. Co., College Point, L. I., manufacturer of airplanes and parts. New company has disposed of 100,000 shares of stock, portion of fund to be used for increased production. Agreement has been made with Curtiss Flying Service, Inc., Buffalo, for exclusive rights for sale of Sikorsky aircraft for commercial use in United States, and similar contract for export with Curtiss Airplane Export Corporation, also of Buffalo. Igor Sikorsky is one of heads of company.

R. H. Macy & Co., Broadway and Thirty-fourth Street, New York, have awarded general contract to Nieman Irving & Co., Inc., 30 East Forty-second Street, for four-story addition to automobile service, repair and garage building, 100 x 100 ft., to cost more than $175,000 with equipment.

Office of Constructing Quartermaster, Picatinny Arsenal, Dover, N. J., will receive bids until Nov. 6 for new operating buildings, including group of 21 buildings in melt loading area, three buildings in shop area, 13 buildings in laboratory area and administration building.

Lackawanna Railroad Co., 90 West Street, New York, has acquired 15 acres at Jersey City, N. J., for new group of multi-story storage and distributing buildings, with main unit 162 x 848 ft., including unloading, elevating, conveying and other handling equipment. Project is reported to cost more than $1,500,000.

System Brake Service, Inc., 54 Sussex Avenue, Newark, has plans for a one-story machine and automobile repair shop, to cost about $25,000. Simon Cohen, 130 Branford Place, is architect.

Public Service Electric & Gas Co., Public Service Terminal, Newark, is planning construction of two-story substation at 1223-29 Broad Street, to cost close to $70,000 with equipment; one-story and basement meter and compressor plant at Piscataway, N. J., to cost more than $35,000 with equipment, and two-story substation on Norfolk Street, Newark, to cost about $45,000 with equipment.

National Air Transport, Inc., 5930 South Cicero Avenue, Chicago, is reported planning new hangar, with shop and repair facilities, at municipal airport, Newark, to cost over $50,000 with equipment.

The Crane Market

ONLY a small number of new inquiries for overhead cranes have appeared in the New York district during the past week. Business in the South and West, however, continues active and most of the orders booked recently have been from these territories. An overhead crane builder in Chicago recently received an order from a large public utility company in that city for a 150-ton, 135-ft. span electric crane. Some desirable orders for locomotive cranes are pending, particularly the crawl-tread type. D. C. Serber, Inc., New York, is reported considering the purchase of a locomotive crane and other contractors with subway contracts or bidding for such work are interested in buying. The Island Transport Co., 120 Broadway, New York, is understood to be in the market for two locomotive cranes for export to St. Pierre Miquelon.

In Pittsburgh attention is centered on the requirements of the National Tube Co. for its new skelp mill at McKeesport, Pa., and those of the American Sheet & Tin Plate Co. in connection with a program of plant betterments recently started at its Vandergrift works, and the cranes that have been pending for the Clairton works of Carnegie Steel Co.

Among recent purchases are:

Viscose Co., Marcus Hook, Pa., 22-ton, 8-wheel, steam locomotive crane from Orton Crane & Shovel Co.

Steel sales Corporation, Chicago, 5-ton, 46-ft. span, overhead electric crane from Whiting Corporation.

Brennan Stone Co., Bridgeport, Conn., 6-ton, 2-motor, overhead crane from H. D. Conkey & Co.

Wisconsin Power & Light Co., Madison, Wis., 10-ton, double girder hand power crane for power station from H. D. Conkey & Co.

St. Louis-San Francisco Railroad Co., St. Louis, 8-ton, hand power crane from H. D. Conkey & Co.

Endicott Forge & Mfg. Co., Endicott, N. Y., 3-ton hand power crane from H. D. Conkey & Co.

Dakota Power Co., Rapid City, S. D., 5-ton, double I-beam hand power crane from H. D. Conkey & Co.

City of Topeka, Kan., four 2-ton underhung push type cranes from H. D. Conkey & Co.

Missouri Pacific Railroad, 20-ton gantry crane for use at Wichita, Kansas, from Whiting Corporation.

Dallas Brass & Copper Co., Chicago, two 3-ton wall bracket jib cranes and one 3-ton underhung electric crane from H. D. Conkey & Co.

Great Lakes Forge Co., Chicago, two 2-ton single I-beam cranes from H. D. Conkey & Co.

Hudson Motor Car Co., Detroit, 1-ton, 17-ft. span, motor driven crane from H. D. Conkey & Co.

Conrad Foundry Co., Montgomery Street, Elizabeth, N. J., gray iron and aluminum castings, has been sold to Ware & Leonard Foundry Co., which will operate plant.

Reiche & Penner, Inc., structural and ornamental iron works, 673-677 Lexington Avenue, Brooklyn, is building a 60 x 100 ft. addition to its plant. Frank Penner is president.

New England

BOSTON, Oct. 8.—New equipment, especially for high production, is more active than appears on the surface. Recent sales include $40,000 worth of shop equipment to a Hartford manufacturer, and numerous individual tools to Connecticut Valley, Rhode Island and Massachusetts users. The largest buyers and prospective purchasers are those manufacturing automobile and radio parts.

The local used tool market is slow. A Connecticut dealer selling discarded equipment of a General Motors subsidiary is invading Massachusetts, New Hampshire, Vermont and Rhode Island with low prices. Another Connecticut dealer, specializing in gear making and special equipment, is also making broad terms and securing considerable business. A new Worcester shop has just purchased about $5,000 worth of machine tools, and a Cambridge plant has bought rebuilt milling machines.

Small tools are very active. September was a big month and October is starting off even more encouragingly. The improvement is due to a greater distribution of small tools rather than to an expansion in machine tools.

Vacuum Co., 105 Mystic Avenue, Somerville, Mass., has started work on a $100,000 addition and alterations.

McClintock & Craig, 458 Bridge Street, Springfield, Mass., have closed bids on a one-story plant, 120 x 140 ft., to be built by Moore Drop Forge Co., Chicopee, Mass.

Henry Perkins Co., Bridgewater, Mass., has under consideration a foundry addition. Details will be announced shortly.

Van Norman Machine Co., 160 Wilbraham Avenue, Springfield, Mass., will build a two-story addition, 23 x 83 ft., and make plant alterations.

No date has been set for bids to close on a one-story machine shop, 40 x 100 ft., to be erected by Everett Avenue Auto Parts Co., 234 Everett Avenue, Chelsea, Mass.

Norton Co., New Bond Street, Worcester, Mass., abrasives and grinding machinery, will start work soon on a one-story, 39 x 78 ft., addition.

William J. Murdock Co., 347 Washington Avenue, Chelsea, Mass., electric specialties, will start work soon on a two-story plant 50 x 95 ft. Eisenberg & Feer, 46 Cornhill, Boston, are architects.

Plans are being arranged by Case Board Co., Andover, Conn., manufacturer of fibreboard products, for rebuilding part of mill destroyed by fire recently, with loss about $75,000 with equipment. Christopher Case is head.

Russell Mfg. Co., Middletown, Conn., manufacturer of brake lining, etc., has plans for new branch plant at St. Johns, Que., to cost about $125,000 with equipment.

Blackall, Clapp & Whittemore, 31 West Street, Boston, architects, are completing plans for a one-story automobile service, repair and garage building at Milton, Mass., to cost about $135,000 with equipment.

George M. MacKenzie, New Haven, Conn., has filed plans for a one-story machine shop, 50 x 150 ft. Leo F. Caproni, 1056 Chapel Street, is architect.

F. C. Hersee Co., 47 Bacon Street, Watertown, Mass., manufacturer of automobile tools, has awarded general contract to L. C. Titus, 50 Lincoln Street, for one-story addition, 50 x 100 ft., with extension, 30 x 45 ft., to cost about $45,000 with equipment.

United States Oil Co., Providence, R. I., plans rebuilding of portion of four-story plant recently destroyed by fire, with loss about $40,000 including equipment.

Bush Mfg. Co., Inc., 100 Wellington Street, Hartford, Conn., manufacturer of automobile radiators and parts, has awarded general contract to Industrial Construction Co., 721 Main Street, for a one-story addition, 50 x 50 ft., to cost about $25,000 with equipment.

Mason & Parker Mfg. Co., Winchendon, Mass., manufacturer of toys, has taken over a three-story factory at Fiskdale, Mass., for new branch plant.

Strathmore Paper Co., Mittineague, Mass., has awarded general contract to L. S. Wood, 14 Stockbridge Street, Springfield, Mass., for four-story addition to mill at Woronoco, Mass., 50 x 200 ft., to cost about $150,000 with equipment.

Peerless Unit Ventilation Co., Inc., has removed main office and factory to 719-734 Crescent Avenue, Bridgeport, Conn. New York office remains at 369 Lexington Avenue.

South Atlantic

BALTIMORE, Oct. 8.—Contract has been let by International Harvester Co., Chicago, to J. L. Robinson Construction Co., 522 Park Avenue, Baltimore, for one-story factory branch, storage and service plant, 125 x 250 ft., for motor truck division at Baltimore, to cost about $125,000 with equipment.

Nardin-Armstrong Co., Bedford, Va., H. E. Armstrong, president, will build new one-story plant, 150 x 350 ft., to manufacture tools, dies, steel stampings and kindred products, to cost about $70,000 with equipment.

Hampton Smith, 506 McBee Avenue, Greenville, S. C., is at head of project to establish local plant for manufacture of textile machinery and parts. Company will be organized to carry out enterprise.

General Purchasing Officer, Panama Canal, Washington, will receive bids until Oct. 16 for motor-driven shaper, two single planers, motor-driven hand jointers, machinists' hammers, sledge hammers, hand saws, axes, augers, and other tools, Panama Schedule 1905; until Oct. 26 for bolt-cutting machine, power band saw, hand saws, vises, reamers, drills, hoists, and other equipment, Panama Schedule 1907.

Officials of Parker Metal Decorating Co., Howard and Ostend Streets, Baltimore, headed by Edwin A. Parker and Harry G. Evitt, have organized Independ-

ent Can Co., with capital of $1,000,000, to establish local plant to manufacture tin cans. Company will be managed in close affiliation with Parker company.

Board of School Commissioners, Charlotte, N. C., is considering installation of manual training equipment in addition to Alexander Graham Junior High School, to cost over $200,000, for which bids will be asked on general contract in November. Charles C. Hook, Commercial Bank Building, is architect.

Virginia Public Service Co., Charlottesville, Va., is said to be acquiring property on Big and Little Rivers, Rockbridge County, as site for hydroelectric generating plant, project to cost about $2,000,000 including transmission lines.

American Oil Co., American Building, Baltimore, has awarded general contract to Bonham Engineering & Construction Co., Bridgeton, N. J., for new storage and distributing plant near Bridgeton, to cost over $50,000 with equipment. T. J. O'Connell is company engineer.

Savannah River Electric Co., operated by Southeastern Power & Light Co., 120 Broadway, New York, is reported planning construction of hydroelectric generating plant on Savannah River, near Augusta, Ga., with transmission lines to connect with other properties of company. Project will cost over $10,000,000.

Philadelphia

PHILADELPHIA, Oct. 8.—Plans are being completed by Edgcomb Steel Co., Eleventh and Cambria Streets, Philadelphia, for one-story storage and distributing plant, to cost about $135,000 with equipment.

Mitchell Specialty Co., Inc., Edmund and Shelmire Streets, Philadelphia, manufacturer of automobile hardware, has awarded general contract to I. A. Stoutenburg, 3438 North Marvine Street, for one-story addition to machine shop, to cost about $36,000 with equipment.

William L. Charr and Harry Kattelman, Victory Building, Philadelphia, architects, have plans for a four-story automobile service, repair and garage building, 60 x 100 ft., to cost about $150,000 with equipment.

Atwater Kent Mfg. Co., Wissahickon Avenue and Abbotsford Road, Philadelphia, manufacturer of radio equipment, is having plans drawn for a one-story plant unit, to cost over $100,000 with machinery. Ballinger Co., Twelfth and Chestnut Streets, is architect and engineer.

Cramp-Morris Industrials, Inc., Richmond and Norris Streets, Philadelphia, manufacturer of turbine engines and other heavy machinery, has asked bids on general contract for a one-story pipe shop.

Piers and Terminals Division, Merchant Fleet Corporation, Washington, will soon ask bids for 25 steel tackle structures at Tidewater Terminal, Philadelphia, for unloading lumber, etc., each unit to have capacity of about 10 tons, providing for mechanical handling of material.

Philadelphia Air Terminal, Inc., 225 South Fifteenth Street, Philadelphia, C. D. Rottner, in charge, has engaged B. R. Shaw Co., Inc., 810 Olive Street, St. Louis, engineer, to prepare plans for airport on site bounded by Swanson, Fifth and Pattison Streets and Parker Avenue, including hangars, repair shops, oil storage and other buildings, to cost about $1,000,000.

International Harvester Co., 2905 North Sixteenth Street, Philadelphia, and 606 South Michigan Avenue, Chicago, has purchased property at Erie Avenue and F Street, Philadelphia, comprising two-story factory, two one-story automobile service and garage buildings and one-story shop, for new factory branch and distributing plant for motor truck division.

Board of Education, Trenton, N. J., plans installation of manual training equipment in new two-story senior high school, to cost about $2,000,000, for which bids will be asked on general contract early in November. Ernest Sibley, Bluff Road, Palisade, N. J., is architect.

Department of Institutions and Agencies, State Office Building, Trenton, N. J., William J. Ellis, commissioner, is asking bids on general contract until Oct. 16 for a one-story industrial shop unit at Colony for Feeble-Minded, Vineland, to cost $100,000 with equipment. C. N. Leatham, State Office Building, is architect.

Refrigerator Equipment Co., Wilmington, Del., recently organized, has acquired plants and businesses of Knox Products Co., Fourth and Greenhill Avenues, manufacturer of refrigerators, cold room equipment, refrigerator insulation specialties, etc., and Glacifer Co., Kennett Square, Pa., manufacturer of refrigerator equipment and materials. New company will consolidate organizations, continuing both plants in service. An expansion program is planned. Severn P. Ker, Jr., is president of new company; George B. Scarlett, vice-president, and W. W. White, secretary and treasurer.

Louis Levy, 5941 Pine Street, Philadelphia, and associates have organized Quaker Metal Products Co., with capital of $20,000, and will operate local plant for manufacture of metal goods. Louis Powell, Fourth and Snyder Streets, is also interested in new company.

Baily Mfg. Co., Beaver Street, North Wales, Pa., manufacturer of automobile bodies, etc., is said to be planning to rebuild part of plant destroyed by fire Sept. 28, with loss reported over $125,000 with equipment.

Heintz Mfg. Co., Front Street and Olney Avenue, Philadelphia, manufacturer of automobile bodies and parts, is erecting a new building to cost $300,000 and not $27,000, as stated in these columns last week.

Pittsburgh

PITTSBURGH, Oct. 8.—Machine tool business is fairly active in this district, although most of the sales are single tools. Inquiry is good. In heavy equipment, interest centers in a 36-in. blooming mill and a structural mill, which the Aluminum Co. of America is planning for its Massena, N. Y., works, for rolling aluminum in shapes for railroad and street cars.

West Pennsylvania Power Co., West Penn Building, Pittsburgh, is planning new one-story equipment storage and distributing plant, 100 x 250 ft., with repair department, shop and garage, at Connellsville, Pa., to cost $160,000 with equipment.

Whitaker Paper Co., 101 Ninth Street, Pittsburgh, has engaged R. Maurice Trimble, Commonwealth Annex, architect, to prepare plans for storage and distributing plant, 140 x 540 ft., to cost about $200,000 with equipment.

DuPont Engineering Co., Du Pont Building, Wilmington, Del., has plans for a new electric power plant at Belle, W. Va., to cost over $150,000 with equipment.

Zenith Airway Co., Uniontown, Pa., is negotiating for site for new plant at Wellsville, Ohio, and contemplates early removal. Works will cost more than $50,000 with equipment. Chamber of Commerce, Wellsville, is interested in project.

Marine Mfg. & Supply Co., 35 Water Street, Pittsburgh, manufacturer of barge and other marine equipment, has been reorganized and plans expansion. L. V. Stevens is president; William K. Stamets, vice-president, and Clifford B. Connelly, secretary and treasurer.

Detroit

DETROIT, Oct. 8.—Contract has been let by Briggs Mfg. Co., 11631 Mack Avenue, Detroit, manufacturer of automobile bodies, to Otto Misch Co., 159 East Columbus Street, for one-story addition, 140 x 370 ft., to cost about $100,000 with equipment.

Grace Construction Co., Fort Wayne, Ind., road contractor, has acquired three-acre tract at Marshall, Mich., for new plant. Initial structures will include one-story machine shop for repair of road machinery, including parts production, and general equipment storage and distributing plant.

Newaygo Portland Cement Co., Newaygo, Mich., is clearing ground at Charlevoix, Mich., for a new cement mill, to cost over $650,000 with machinery.

Fisher Body Corporation, General Motors Building, Detroit, has asked bids on general contract for new one-story plant, 100 x 750 ft., with steam power plant and office building, to cost more than $550,000 with equipment.

Kalamazoo Loose Leaf Binder & Equipment Co., Kalamazoo, Mich., has plans for new one-story plant, to cost about $40,000 with equipment. O. F. Miller, Pratt Building, is architect.

George L. McCarthy, Grand Rapids, Mich., and associates have leased building on Kent Street, Portland, Mich., for aircraft manufacture. Initial output will be devoted to monoplanes, including parts production and assembling. Engine units will be secured from outside sources.

Grand Rapids Store Equipment Co., Monroe Avenue, N. W., Grand Rapids, Mich., manufacturer of show cases, etc., has awarded general contract to Owens-Ames-Kimball Co., Pearl Street, for a one-story and basement addition, 100 x 165 ft., with extension, 40 x 100 ft., to cost about $70,000 with equipment.

Federal Motor Truck Co., Federal Avenue, Detroit, is arranging for construction of two-story addition, to cast about $140,000 including equipment.

Chevrolet Motor Co., 3044 West Grand Boulevard, Detroit, will re-equip and retool its foundry unit at Saginaw, Mich., and carry out other changes and improvements preparatory to starting production on new models.

A. C. Spark Plug Co., Harriet Avenue, Flint, Mich., is considering one-story addition, 145 x 275 ft., primarily for die-casting and heat-treating service, to cost about $160,000 with equipment.

American Coil Spring Co., 1455 West Thirty-seventh Street, Chicago, is completing plans for new works at Muskegon, Mich., initial unit to total about 20,000 sq. ft. of floor space, to cost about $50,000. Present plant will be removed to new location, as well as plant of Monarch

Steel Treating Co., Chicago, recently acquired.

Manufacturers Foundry Co., Holland, Mich., has been organized to make gray iron castings. Plant is in operation and materials and equipment are being purchased.

Buffalo

BUFFALO, Oct. 8.—Plans are being arranged by G. Elias & Brother, 965 Elk Street, Buffalo, for new one- and two-story airplane manufacturing plant at Cheektowaga, near Buffalo, including parts production and assembling, to cost over $100,000 with equipment.

Precision Die Casting Co., Syracuse, N. Y., has acquired property at Cleveland for new branch plant, to cost about $100,000, with equipment.

Everlasting Sign Corporation, Fourteenth Street and Buffalo Avenue, Niagara Falls, N. Y., has plans for new two-story plant, to cost about $25,000 with equipment. J. R. White, 426 Third Street, is architect.

Joseph A. Sanders, 115-17 Lathrop Street, Buffalo, operating a sheet metal-working and roofing plant, has acquired adjoining property and plans addition to double, approximately, present floor space, to cost more than $30,000 with equipment.

Marine Elevator Co., Childs Street and Buffalo River, Buffalo, has filed plans for a new one-story machine shop.

Utica Structural Steel Corporation, Utica, N. Y., recently organized, will take over Andrews Iron & Steel Co., with local plant. New company proposes addition to mill in East Utica district, early next year. Wilbur F. Helmer is general manager.

City Council, City Hall, Syracuse, N. Y., W. D. Robbins, city manager, has plans for a new municipal airport, including hangar, repair shop and other units.

Milwaukee

MILWAUKEE, Oct. 8.—New business in machine tools continues good and, judging by the scope and character of inquiry, prospects for the future are promising. Locally, the situation is regarded as the best in several years, for, despite heavy buying of equipment for several months, a comparatively large volume remains to be placed. Prospective buyers cover a wide range of industries.

Milwaukee employment increased 692 persons during September, and the Oct. 1 figure of 38,077 in 50 typical plants is 2533 higher than a year ago, and the highest peace-time record.

Nordberg Mfg. Co., Milwaukee, will enlarge its works at Oklahoma Avenue and Chicago Road at an estimated cost of $500,000, following acquisition of crusher business of Symons Brothers Co., Chicago, for which Nordberg company has been manufacturing two-thirds of its crusher machinery requirements. Nordberg company has negotiated a new issue of $1,000,000 of 6 per cent serial gold bonds to cover purchase of Symons business and enlargement of its works. Robert E. Friend is president.

Oilgear Co., 661 Park Street, Milwaukee, manufacturer of broaching machines, presses, pumps, feeds and transmissions, is enlarging its works at a cost of $175,000 by a machine shop addition, 100 x 180 ft., with a second story, 20 x 100 ft., for offices. Worden-Allen Co., Milwaukee, is general contractor.

Highway Trailer Co., Edgerton, Wis., has leased three buildings of former Moline Wagon Co. at Stoughton, Wis., and is installing equipment to manufacture steel and wood bodies for trailers and motor trucks. Space released in main works at Edgerton will be devoted to production of trailers, axles, etc.

Milwaukee Foundry Equipment Co., 473 Idaho Street, Milwaukee, is erecting a new factory, 70 x 130 ft., part two stories, to cost about $35,000. Albert Pergande is consulting engineer.

National Gauge & Equipment Co., La-Crosse, Wis., subsidiary of MotoMeter Co., Long Island City, N. Y., has broken ground for a two-story extension, 130 x 160 ft., and an addition to power house. A 50,000-gal. steel tank is being installed in connection with automatic sprinkler system. Improvements will cost about $100,000.

Allis-Chalmers Mfg. Co., Milwaukee, is building a two-story addition, 60 x 115 ft., to administration building of tractor division of main works in West Allis, Milwaukee.

Minneapolis, St. Paul & Sault Ste Marie Railway, Minneapolis, is making surveys for improvements in round house, machine shop, coaling plant, and water tanks at Ashland, Wis. Replacement of considerable equipment is contemplated.

Mads Madsen, National Building, Minneapolis, Minn., is low bidder at $164,997 for general work of erecting a new vocational training school, 120 x 150 ft., three stories and basement, at Green Bay, Wis. It will cost about $300,000 complete. Shop equipment purchases probably will not be made until early in 1929. Architects are Foeller, Schober & Berners, Green Bay.

Bids close Oct. 23 with J. W. Purves, secretary Board of Education, Friendship, Wis., for a new two-story high school, 73 x 108 ft., including manual training department. It will cost about $100,000. Architects are Smith & Brandt, Appleton and Manitowoc, Wis.

Lomira Mfg. Co., Lomira, Wis., manufacture of furniture and hardwood specialties, will build a new plant costing about $75,000 to replace factory destroyed by fire on Sept. 18.

Chicago

CHICAGO, Oct. 8.—Tendencies in the machine tool trade are not as well defined as a week ago. Miscellaneous orders are more widely scattered and less numerous, but fresh inquiry is more active. Progress is slow on large lists.

The Chicago, Milwaukee, St. Paul & Pacific, is tabulating bids recently taken. Allis-Chalmers Mfg. Co., Milwaukee, is not yet ready to make known its exact needs and the A. O. Smith Corporation has not passed a formal appropriation for its machine tool requirements. An electrical equipment manufacturer in Chicago is making numerous replacements and is reported to have purchased a number of small lathes. A pump manufacturer in Iowa has ordered a 16-in. x 6-ft. lathe and a local builder of radio sets has purchased a 50-ton press. The Santa Fe will take prices on an 18-in. x 1½-in. double-wheel, motor-driven grinder for delivery to California.

Commonwealth Edison Co., 72 West Adams Street, Chicago, will build a substation, 100 x 160 ft., on Prairie Avenue, to cost $200,000 with equipment.

Pioneer Publishing Co., 1114 North Boulevard, Oak Park, Ill., will install power equipment in a four-story printing plant to cost more than $250,000. S. N. Crowen & Associates, 22 West Monroe Street, are architects and engineers.

Iowa Railway & Light Co., Davenport, Iowa, will spend about $200,000 on improvements in its power plant at Boone, Iowa.

Household Utilities Corporation, Twenty-second Street and Fifty-fourth Avenue, Cicero, Ill., will build an addition, 80 x 400 ft., to cost $200,000.

Commercial National Bank, Waterloo, Iowa, has been appointed receiver of Litchfield Mfg. Co., Waterloo, maker of agricultural implements. Company will continue operations under receiver.

E. L. Essley Machinery Co., 557 West Washington Boulevard, Chicago, has been appointed district agent for Consolidated Machine Tool Corporation.

Standard Oil Co., 910 South Michigan Avenue, Chicago, has plans for one-story storage and distributing plant at Decatur, Ill., to cost about $100,000 with equipment. Schlinz & Bailey, 53 West Jackson Boulevard, are architects.

Union Furniture Co., Eighteenth Avenue, Rockford, Ill., has awarded general contract to Holmquist-Peterson Co., Swedish-American Bank Building, for a three-story factory, 80 x 300 ft., to replace one recently destroyed by tornado, to cost over $100,000 with machinery. Peterson & Johnson, Swedish-American Bank Building, are architects.

J. I. Case Threshing Machine Co., Eighth Street, Des Moines, Iowa, has engaged C. V. Johnson, Commonwealth Building, architect, to prepare plans for a four-story addition, 100 x 130 ft., to cost about $85,000 with equipment.

Board of Trustees, University of Chicago, 189 West Madison Street, Chicago, will soon take bids for superstructure for new three-story and basement power plant, 100 x 110 ft. It will have initial capacity of 12,000 hp. Philip B. Maher, 157 East Erie Street, is architect.

Chrysler Corporation, East Jefferson Street, Detroit, manufacturer of automobiles, will build a one-story factory branch and distributing plant at Chicago, to cost about $100,000 with equipment. Mundie & Jensen, 39 South La Salle Street, Chicago, are architects.

Board of Education, Minot, N. D., is considering installation of manual training equipment in three-story junior high school addition to cost over $200,000, for which bids have been asked on general contract. Bugenhagen & Molander, Union National Bank Annex, are architects and engineers.

Cudahy Packing Co., Union Stock Yards, Chicago, will soon begin superstructure for four-story cold storage and refrigerating plant, 55 x 145 ft., at Sioux City, Iowa, to cost about $180,000 with machinery.

Lakeside Railway Signal Co., Freeport, Ill., is completing plans for first unit of new plant at South Beloit, Ill., one-story 40 x 300 ft., to cost about $100,000 with equipment.

Rapid City, Black Hills & Western Railway Co., Rapid City, S. D., has awarded general contract to Kepp Construction Co., local, for new locomotive house and machine shop, to cost about $30,000 with equipment.

Cleveland

CLEVELAND, Oct. 8.—Machine tool business and inquiry continues good. Buying is well distributed although the automobile parts industry is showing more activity than other fields. The White Motor Car Co., Cleveland, will purchase considerable machinery to manufacture a new truck model which it will bring out shortly. Buying by automobile manufacturers in the Detroit territory has slowed down, but is expected to show more life when motor car builders effect plans to bring out new 1929 models. Turret lathes continue to move well in single orders from widely diversified industries. Buyers as a rule want quick deliveries, but a local manufacturer is unable to make shipments within six or eight weeks.

Union Chain & Mfg. Co., Sandusky, Ohio, maker of elevating, conveying and power transmission machinery, has acquired control of American High Speed Chain Co., Indianapolis, and subject to approval of stockholders, will combine. Indianapolis company manufactures complete line of silent or high speed chains, smaller pitch steel roller chain and sprockets and lines of two companies will supplement each other. With approval of stockholders, machinery and equipment of American company will be removed to Sandusky, a new unit having been provided. J. C. Howe, president, and W. A. McCosh, vice-president of American company, will become part of new organization, officers of which will be Fred Emmons, president and treasurer; J. C. Howe and Walter Hay, vice-presidents, and E. F. Emmons, secretary.

Uniflow Stoker Corporation, Sidney, Ohio, has been organized to manufacture power stokers for 50 to 200-hp. boilers and Turner domestic stokers. It is reorganization of Uniflow Stoker Co., formerly at Piqua, Ohio, which has been recapitalized and removed to new factory at Sidney. Company is in production and also manufactures all parts.

Cleveland Planer Co., 3148 Superior Avenue, Northeast, Cleveland, has purchased good will, patents, drawings, patterns, jigs, fixtures and rights to manufacture and sell Emco W bench power punch press, formerly built by Enterprise Machine Tool Co., Chicago. Cleveland company expects to build presses in quantity to be carried in stock for prompt shipment and will also be in position to furnish repair parts.

City Ice & Fuel Co., 6611 Euclid Avenue, Cleveland, is considering one-story ice-manufacturing plant at Willoughby, Ohio, to cost about $200,000 with machinery.

General Tire & Rubber Co., Akron, Ohio, is said to be planning an expansion program to increase capacity about 50 per cent, to cost over $1,000,000.

Fred W. Mettler, Union Mortgage Building, Cleveland, architect, has awarded general contract to Vokes Construction Co., same address, for two-story automobile service, repair and garage building, and bus terminal 120 x 220 ft., to cost about $160,000 with equipment.

City Council, Zanesville, Ohio, has authorized fund of $60,000, for establishment of municipal airport, including hangar, with shop and repair facilities, oil storage and other units.

Goodyear Tire & Rubber Co., Akron, Ohio, has awarded general contract to Hunkin-Conkey Construction Co., Hunkin-Conkey Building, Cleveland, for a five-story addition, 200 x 600 ft., to cost more than $750,000 with equipment. Portion of structure will be used for storage and distributing. Further expansion is said to be under consideration.

Forest City Walworth Run Foundries Co., 2500 West Twenty-fifth Street, Cleveland, has awarded general contract to Sam W. Emerson Co., 1836 Euclid Avenue, for four-story foundry and distributing unit to replace part of plant lately damaged by fire, to cost over $70,000 with equipment.

Van Huffel Tube Corporation, Warren, Ohio, manufacturer of steel tubing, has purchased former plant of Sterling Knight Motor Co., Youngstown, for expansion.

Gears & Forgings, Inc., Cleveland, will enlarge its gear making departments by a three-story building, 72 x 72 ft.

Cincinnati

CINCINNATI, Oct. 8.—The first week of October has brought no signs of a let-down in machine tool buying, which has been at about the same rate as in September. While the automobile industry continues the largest source of machine tool business, several builders state that orders have been even more diversified than in recent weeks. Unfilled orders have accumulated to such an extent that many companies are having difficulty in making early deliveries. Production is holding up to high levels and in some cases plants have scheduled extra shifts to speed output.

An automobile maker in the Detroit district has bought six automatic lathes, while a manufacturer of airplane engines has contracted for four large engine lathes. Foreign business has been of somewhat greater proportions in the past few weeks, outstanding transactions including five rapid production lathes for delivery to Czechoslovakia and four lathes for shipment to Holland.

Board of Education, Marietta, Ohio, is said to be planning installation of manual training equipment in addition to high school, to cost about $130,000. Garber & Woodward, 4 West Seventh Street, Cincinnati, are architects.

Black-Clawson Co., Second and Vine Streets, Hamilton, Ohio, manufacturer of pulp and paper mill machinery, has acquired adjoining property and contemplates expansion.

City Council, Middlesboro, Ky., is said to be planning installation of a municipal electric light and power plant. A city waterworks is also proposed.

Board of Education, Louisville, is reported planning installation of manual training equipment in new three-story and basement high school, to cost $375,000, for which bids have been asked on general contract. J. M. Colley is architect.

Air Corps, Material Division, Wright Field, Dayton, Ohio, is asking bids until Oct. 17 for coupings and dies, circular 137; for 100 intake wrenches, disks and pointers, circular 138; until Oct. 16 for 12,000 ferrules and electric terminals, circular 139, and 115,000 hose clamps, circular 142.

Lewis Mfg. & Supply Co., Louisville, manufacturer of kitchen equipment, has leased for new plant a factory to be erected at Brook and Bloom Streets, to cost about $30,000.

Prest-O-Lite Co. and Linde Air Products Co., 30 East Forty-second Street, New York, affiliated organizations, have awarded general contract to W. W. Wessell, 388 North Front Street, Memphis, Tenn., for new local plants, each one-story 58 x 86 ft., to cost about $70,000 with equipment.

Stanton Motor Co., Broad and Grant Streets, Columbus, Ohio, has leased a building to be erected on local site, to cost about $100,000 with equipment, for new service, repair and garage building. Richard, McCarty & Bulford, 584 East Broad Street, are architects.

Indiana

INDIANAPOLIS, Oct. 8.—Cyclone Fence Co., Greensburg, is reported planning one-story addition to cost over $40,000 with equipment. Headquarters are at Waukegan, Ill.

Hayes Body Corporation, Grand Rapids, Mich., has purchased plant at 1231 West Morris Street, Indianapolis, formerly operated by Murray Body Corporation, Detroit. New owner will continue production and plans output of about 100 bodies daily.

Link-Belt Co., Holmes Avenue and West Michigan Street, Indianapolis, has awarded general contract to Latham & Walters, Empire Life Building, for three-story addition, to cost $150,000 with equipment. Headquarters are at 910 South Michigan Avenue, Chicago.

City Council, Shelbyville, is considering establishment of municipal airport, with hangars, repair and reconditioning shops, oil storage and other units, to cost over $50,000.

New Albany Machine Mfg. Co., New Albany, has purchased patents and right to manufacture sheet metal-working machinery, formerly owned by J. M. Robinson Mfg. Co., Cincinnati. Jigs and inventory are now being transferred to New Albany plant, East Tenth and Water Streets.

St. Louis

ST. LOUIS, Oct. 8.—Parks Aircraft, Inc., St. Louis, recently organized by Russell E. Gardner, head of Gardner Motor Co., Main and Rutger Streets, and associates, is planning construction of new works, with parts and assembling divisions, at East St. Louis, Ill., to cost more than $150,000 with equipment. Harry P. Mammen is president.

Benjamin S. Lang, St. Louis, care of W. S. Frank, Security Building, architect, has plans for three-story and basement automobile service, repair and garage building, 70 x 175 ft., to cost more than $100,000 with equipment.

Houston Oil Co., Houston, Tex., has plans for a new storage and distributing plant at Herbert, Ark., to cost over $50,000 with equipment. Company will also improve oil refinery and install additional equipment.

Kansas Power & Light Co., Atchison, Kan., will remodel building at Tenth and Main Streets for a new machine shop and motor bus service and garage unit. A hydraulic lift and other equipment will be installed.

General Tool Co., Enid, Okla., is considering new one-story plant 75 x 135 ft., to cost about $40,000 with equipment.

Peoples Sugar Co., Moroni, Utah, is reported planning new beet sugar mill near Cozad, Neb., to cost about $500,000

with machinery. Project includes power house and machine shop.

C. H. Walbert, Penn and Thirty-ninth Streets, Oklahoma City, Okla., and associates are planning construction of new ice-manufacturing plant at Tulsa, Okla., to cost about $100,000 with equipment.

Meginnis & Schaumberg, Federal Trust Building, Lincoln, Neb., architects, have plans for a three-story automobile service, repair and garage building, 50 x 140 ft., to cost more than $100,000 with equipment.

Empire Gas & Fuel Co., Bartlesville, Okla., has plans for a pipe line from its properties in Mid-Continent field to a point near Chicago, about 450 miles, and contemplates a new oil refinery at northern terminus, with capacity to handle about 10,000 bbl. of crude oil per day. Project will cost more than $1,500,000.

Standard Steel Works, North Kansas City, Mo., H. J. Bornstein, head, has plans for one-story storage and distributing plant, 100 x 115 ft., with shop facilities, to cost about $60,000.

Gulf States

BIRMINGHAM, Oct. 8.—Plans have been filed by Houston Lighting & Power Co., Houston, Tex., for a one-story equipment storage and distributing plant, with automobile service and garage facilities, 168 x 370 ft., to cost about $250,000.

United States Cast Iron Pipe & Foundry Co., Birmingham, is carrying out an expansion program at North Birmingham, including a new unit for producing pipe 4 to 12 in. diameter, 18 ft. long.

Birmingham Electric Co., Birmingham, is disposing of bond issue of $3,000,000, part of fund to be used for expansion and betterments.

Central Power & Light Co., Frost Building, San Antonio, Tex., is reported planning new hydroelectric power plant in Maverick County, to cost about $200,000 with transmission line.

Buick Motor Co., 1420 Young Street, Dallas, Tex., main plant at Flint, Mich., has awarded general contract to Rife Construction Co., Dallas, for three-story factory branch, service and repair building, 95 x 150 ft., to cost about $130,000 with equipment.

Louisiana Public Utilities Co., Lafayette, La., will rebuild part of generating station at Oakdale, La., destroyed by fire Oct. 1, with loss of about $120,000 including equipment.

Board of City Commissioners, Palmetto, Fla., will receive bids until Oct. 22 for equipment for electric light and waterworks station, including Diesel oil engine with direct-connected alternator and accessories; pumping machinery, switchboard, piping, valves and auxiliary equipment. Main Engineering Co., 112 Baker Street, Daytona Beach, Fla., is engineer.

Stamford Independent School District, Stamford, Tex., has authorized construction of one-story manual training school, 55 x 115 ft., to cost about $30,000 with equipment. David S. Castle Co., Alexander Building, Abilene, Tex., is engineer.

Great West Pipe Line Co., Big Springs, Tex., recently organized by Reese S. Allen, City National Bank Building, Wichita Falls, Tex., and associates, is arranging for construction of new oil refinery at Big Springs, with pipe line from Chalk Roberts oil field, Howard County, to refinery. Plant of Interstate Gasoline Co., Iowa Park, Tex., has been acquired by Great West company and part of equipment will be removed to new plant. Project will cost more than $500,000. Mr. Allen is now operating oil refineries at Amarillo, Tex., and other points.

Board of Education, Montgomery, Ala., contemplates installation of manual training equipment in two-story and basement high school in Capitol Heights section, to cost about $200,000 with equipment. Frederick Ausfield, Shepherd Building, is architect.

Following completion of first unit of new steam-operated electric power plant at Lake Pauline, near Quanah, Tex., scheduled for this month, West Texas Utilities Co., Abilene, Tex., plans installation of two additional units with capacity of 40,000 hp., making total of 60,000 hp.

Libbey-Owens Co., Toledo, Ohio, has purchased plant of United States Sheet & Window Glass Co., Shreveport, La., and other assets for price of $6,400,000. New owner is considering extensions and improvements in Shreveport mill and installation of equipment to manufacture laminated glass.

City Council, Denton, Tex., is planning extensions in municipal power plant and additional generating and pumping machinery, to cost about $30,000. J. P. Greenwood, Allen Building, Dallas, Tex., is engineer.

Canada

TORONTO, Oct. 8.—Machine tool business in this market for the past week was practically on a par with that of recent weeks. Some inquiry is coming out in which lists from a half-dozen to a dozen tools are involved, but the bulk of orders is for single tools. Wood-working tools are in strong demand from lumber plants and wood-working shops.

Chrysler Motor Co., has secured 70 acres at Windsor, Ont., and will start work immediately on erection of buildings to manufacture Chrysler, De Soto, Fargo and Plymouth cars and trucks. Plant will cost $1,500,000 and is expected to be completed in January.

Canadian Steel Corporation, Ltd., Ojibway, Ont., is installing equipment to manufacture electrically welded wire mesh for concrete reinforcing. It is also installing equipment to manufacture wire fence and fence posts.

G. G. McKeough, 329 Wellington Street West, Chatham, Ont., is completing arrangements for erection of a new machine shop.

Arthur Jackson Machine Tool Co., Toronto, has moved into its new and larger offices and warehouse at 9 Front Street, East.

Pyramid Paper Products, Ltd., East Angus, Que., is having plans prepared by J. W. Gregoire, 86 Wellington Street North, Sherbrooke, Que., for a factory to cost $40,000. It will be one story, 40 x 280 ft.

Bids are being received (no closing date set) by S. McPhie, architect, Sun Life Building, Hamilton, Ont., for a $25,000 addition to plant of Wallace Barnes Co., Ltd., 274 Sherman Avenue, West, Hamilton, Ont., manufacturer of flat, coil, phosphor bronze, and steel wire springs, etc. It will be two stories and basement, 60 x 120 ft.

National Steel Car Corporation, Ltd., Kenilworth Avenue, Hamilton, Ont., will start work immediately on addition to cost $25,000.

Sangamo Electric Co., of Canada, Ltd., 183 George Street, Toronto, is having plans prepared by Chapman & Oxley, Northern Ontario Building, for two-story addition, 40 x 110 ft.

Bids will be called this month for four-story addition, 150 x 400 ft., to plant of Hinde & Dauch Paper Co. of Canada, Ltd., 45 Hanna Avenue, Toronto. R. Cook is engineer.

Godson Contracting Co., Ltd., 203 Richmond Street, West, Toronto, will start work soon on erection of a one-story machine shop, 34 x 125 ft.

Gray Ball Bearing Co., 686 St. Clarens Avenue, Toronto, has let general contract to Wells & Gray, Ltd., Confederation Life Building, for one-story plant to cost $25,000.

City Council, Charlottetown, P. E. I., contemplates construction and installation of electric light and power plant.

Western Canada

Victoria Cold Storage & Terminal Co., Victoria, B. C., has awarded contract to Luney Brothers, Sayward Building, Victoria, B. C., for a five-story cold storage plant, 110 x 120 ft., at Ogden Point to cost $400,000.

Bids are being received by chairman of Committee on Public Utilities, Winnipeg, until Nov. 19 for delivery at Slave Falls, Man., of equipment and supplies to be used in power development plant under construction, including two 10,000-kva., generators and two 450 kva. generators with accessories and spare parts; also erection of five spillway gates, four sluice gates, and stop logs, etc. Plans and specifications with Winnipeg Hydro Electric Commission, 55 Princess Street, Winnipeg.

Pacific Coast

SAN FRANCISCO, Oct. 4.—Plans are under way by Emsco Aero Engine Co., Los Angeles, E. M. Smith, president, for new plant on eight-acre tract at South Gate, near Los Angeles, to cost about $200,000 with equipment.

Fibreboard Products, Inc., Antioch, Cal., has awarded general contract to Barrett & Hilp, 918 Harrison Street, San Francisco, for new one-story and basement mill, to cost over $80,000 with equipment. Laland Rosener, 233 Sansome Street, San Francisco, is engineer.

In connection with expansion program at its motion picture studios, Fox Film Corporation, Los Angeles, plans installation of power equipment and electrical machinery to cost more than $1,500,000. Entire program will include group of 25 buildings at Westwood to cost about $8,000,000.

Board of Education, Los Angeles, has authorized construction of a one-story vocational shop unit with new high school group on Santa Barbara Avenue, to cost $350,000. Architectural Division, 1445 South San Pedro Street, is preparing plans.

Premier Bed & Spring Co., 5700 Third Street, San Francisco, has filed plans for one-story addition to plant, to cost over $50,000 with equipment.

Wenatchee-Beebe Orchard Co., Clarkston, Wash., is planning construction of new cold storage and refrigerating plant to cost about $70,000 with equipment.

American Can Co., 120 Broadway, New York, and Hunter-Dulin Building, San Francisco, is said to be planning new works at Pittsburg, Cal., for manufacture

of tin cans and other containers, to cost more than $175,000 with equipment.

Ventura Union High School District, Ventura, Cal., plans construction of one-story vocational shop with new junior high school group, for which bonds for $400,000 have been approved. Austin & Ashley, Chamber of Commerce Building, Los Angeles, are architects.

Board of Education, Inglewood, Cal., plans construction of one-story vocational shop with new high school group on Rosecrans Avenue to cost about $400,000. T. C. Kistner & Co., Architects' Building, Los Angeles, are architects.

Century Electric Co., St. Louis, has removed its Spokane, Wash., office to 709 Hutton Building, Sprague and Washington Streets.

Jamison Steel Co., Los Angeles, will be located in its new warehouse at 1320 Santa Fe Avenue on Nov. 1.

Jones & Laughlin Steel Corporation, Pittsburgh, has closed its branch office in Smith Building, Seattle, which was in charge of Jesse K. Barker, general sales manager.

Foreign

CONTRACT has been let by Segura & Jugar Hydroelectric Development Co., Madrid, Spain, to Fox Brothers International Corporation, 33 Rector Street, New York, for five hydroelectric power plants, each with capacity of 20,000 kw., on Segura and Jugar Rivers, southeastern Spain, with transmission lines for service in mining districts in vicinity. About 40 per cent of output will be used later by Spanish Government for electrification of railroads in that territory. Project is reported to cost about $2,000,000.

Plans are said to be under way for organization of a company to develop low grade manganese properties near Santiago de Cuba, headed by Howard Trumbo, American resident at Havana, Cuba, inventor of process for transforming such material into commercial concentrates; A. E. Smith, comptroller Electric Bond & Share Co., 2 Rector Street, New York; J. D. Lannon, vice-president American Radiator Corporation, 40 West Fortieth Street, New York; Martin O'Mara, president Brockway Motor Truck Co., Cortland, N. Y., and others. It is purposed to construct plant with milling capacity of about 1000 tons per day, to cost over $750,000 with machinery.

An automobile company at Sao Paulo, Brazil, has purchased property south of city, as site for an automobile plant, including parts manufacture and assembling. Information at office of Bureau of Foreign and Domestic Commerce, Washington, reference Brazil No. 288445.

Compania Hispano Americano de Electricidad, known as "Chade," Buenos Aires, Argentina, is arranging for early sale of capital stock in United States, representing portion of recent increase in capital of 60,000,000 pesetas (about $11,580,000), fund to be used in part for expansion in power plants and system. Company has work under way on new central generating plant with capacity of 85,000 kw., including additional transmission lines and power substations. Arturo Dunzelmann is manager.

A municipality in State of Sao Paulo, Brazil, is asking bids until Nov. 30 for pumping, power and other equipment for municipal waterworks and sewage systems. Information at office of Industrial Machinery Division, Department of Commerce, Washington, reference Brazil No. 287887.

Increase in Petroleum Output

Production of crude petroleum in the United States in August was 77,829,000 bbl., a gain of about 3 per cent over July, when the total was 75,426,000 bbl. There was a falling off, however, in the aggregate production of the first eight months, which amounted this year to 588,543,000 bbl., compared with 598,242,000 bbl. last year.

New September Record in Building Contracts

Construction contracts in September in the 37 States east of the Rocky Mountains are reported by F. W. Dodge Corporation at $587,674,000. This is the largest figure ever recorded in September. It is 13 per cent ahead of September, 1927, and 14 per cent ahead of August, 1928. It brought the total amount for the first nine months to $5,132,944,000, an increase of 7 per cent over the first nine months of 1927.

Residential construction still holds the first position in volume, at $202,807,000, or 35 per cent of the total. This percentage has been dropping from 40 or more, earlier in the year. Public works and utilities accounted for $119,014,000, industrial buildings for $114,780,000, commercial buildings for $60,068,000, educational buildings for $38,800,000 and hospitals and institutions for $23,846,000.

Lower construction during the remainder of the year is indicated by a drop of 15 per cent in the value of projects contemplated but not yet let. The total, at $522,656,000, is also 17 per cent less than in September, 1927.

Motor Truck Output May Break 1925 Record

Predicting the continuance during the remaining months of 1928 of the high motor truck production which has marked the first eight months, A. J. Brosseau, chairman motor truck committee National Automobile Chamber of Commerce, foresees the possibility of 1928 equaling, if not surpassing, the record year of 1925.

"The National Automobile Chamber of Commerce figure of 66,795 trucks produced in the United States and Canada in August sets a new high mark for the production of trucks in any month since the beginning of the industry," Mr. Brosseau said. "The previous high mark of 61,185 was set in September, 1925. This high production continues the movement which began in May and which characterized the early summer months of this year.

"The accelerated production in mid-year has resulted in a total of 377,954 trucks produced to Sept. 1, compared with 358,234 during the same period last year and 346,528 produced during the first eight months of 1925, the truck industry's record year. In 1925 a total of 531,628 trucks were produced, due chiefly to a well sustained production toward the end of the year. Production was also continued at a good level toward the end of 1926, when a total of 529,920 trucks were produced. The rather marked reduction in the output of trucks during the last quarter of 1927 carried the total for that year below the half million mark for the first time since 1924."

Slight Increase in Shipments of Railroad Locomotives

Shipments of locomotives in September totaled 41, compared with 34 in August, which was the lowest number for many years. The September total was less than one-third that of September, 1927, when 127 units were shipped. Twenty-eight of the 41 are steam locomotives for domestic use and two are electric units on domestic order. The remaining 11 are steam engines for export.

During the first nine months shipments totaled 435, against 838 in the corresponding period of 1927. Steam and electric units for domestic use this year numbered 285 and 87 respectively, against 573 and 116 last year. Steam and electric units for export numbered 61 and 2 this year, against 136 and 13 last year.

Slight Increase in Industrial Coal Stocks

Stocks of anthracite and bituminous coal in the United States in the hands of industries on Sept. 1 are estimated by the National Association of Purchasing Agents at 40,090,000 tons, a gain of 1½ per cent from the 39,415,000 tons Aug. 1. This is the first upturn of the curve since last October. The average stocks are estimated as equivalent to 37 days' supply at current consumption rates, an increase of one day during the month. Steel mills are estimated to have 33 days' supply, railroads 33 days' supply, by-product coke plants 23 days, electric utilities and coal gas plants 55 days and other industries 36 days.

Industrial consumption during August is given as 33,890,000 tons, a gain of 1 per cent over July and the highest figure since last May. Production in August was 48,598,000 tons, a gain of 16 per cent over July, and the highest figure since last March.

The Technology Club, Syracuse, N. Y., will celebrate the twenty-fifth anniversary of its founding with an all-day program, Oct. 15, ending with a banquet in the evening.